

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Monique Willis Examiner #: 75068 Date: 5/17/04
Art Unit: 1746 Phone Number 301-272-1309 Serial Number: 09/865,478
Mail Box and Bldg/Room Location: 6C71 Results Format Preferred (circle) PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Solid Composite Polymer Electrolyte
Inventors (please provide full names): Yui-Wen Chen, Yang, Hung-Chang Chen,
Fu-Luo Lin
Earliest Priority Filing Date: 5/29/2001

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

please do a search on claims 1 + 13.

Thanks.

STAFF USE ONLY

	Type of Search	Vendors and cost where applicable
Searcher: <u>Rozema</u>	NA Sequence (#) _____	STN <u>✓</u>
Searcher Phone #: <u>2-2546</u>	AA Sequence (#) _____	Dialog _____
Searcher Location: <u>E171700</u>	Structure (#) <u>✓</u>	Questel/Orbit _____
Date Searcher Picked Up: <u>5/27/04</u>	Bibliographic _____	Dr.Link _____
Date Completed: <u>5/28/04</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: _____	Fulltext _____	Sequence Systems _____
Clerical Prep Time: <u>60 min</u>	Patent Family _____	WWW/Internet _____
Online Time: <u>2h</u>	Other _____	Other (specify) _____

L Number	Hits	Search Text	DB	Time stamp
1	3183	ELECTROLYTE AND POLYACRYLONITRILE	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:06
2	154296	((aluminum adj oxide) or (titanium adj dioxide))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:12
3	451	((ELECTROLYTE AND POLYACRYLONITRILE) and ((aluminum adj oxide) or (titanium adj dioxide)))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:06
4	35	((ELECTROLYTE AND POLYACRYLONITRILE) and ((aluminum adj oxide) or (titanium adj dioxide))) and (lithium adj perchlorate)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:09
5	17	((ELECTROLYTE AND POLYACRYLONITRILE) and ((aluminum adj oxide) or (titanium adj dioxide))) and (lithium adj perchlorate) and amorphous	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:10
6	17	((ELECTROLYTE AND POLYACRYLONITRILE) and ((aluminum adj oxide) or (titanium adj dioxide))) and (lithium adj perchlorate) and amorphous) and (composite or composition)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:10
7	36038	((aluminum adj oxide) or (titanium adj dioxide)) and ceramic	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:12
8	163	((ELECTROLYTE AND POLYACRYLONITRILE) and ((aluminum adj oxide) or (titanium adj dioxide))) and ceramic)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:12
9	18	((ELECTROLYTE AND POLYACRYLONITRILE) and ((aluminum adj oxide) or (titanium adj dioxide))) and ceramic)) and (lithium adj perchlorate)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:13
10	738	((ELECTROLYTE AND POLYACRYLONITRILE) and filler	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:13
11	208	((ELECTROLYTE AND POLYACRYLONITRILE) and filler) and ((aluminum adj oxide) or (titanium adj dioxide))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:13
12	7	((ELECTROLYTE AND POLYACRYLONITRILE) and filler) and ((aluminum adj oxide) or (titanium adj dioxide))) and (lithium near perchlorate)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2004/05/21 21:14

lithium polymer battery

L23 ANSWER 34 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
 TI Solid acrylic **polymer**-containing **electrolytes** for
lithium secondary batteries

L23 ANSWER 35 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
 TI Secondary **batteries** with solid **polymer**
electrolytes

=> d ibib abs hitstr ind total

L23 ANSWER 1 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2004:182342 CAPLUS
 DOCUMENT NUMBER: 140:202487
 TITLE: Rechargeable **composite polymer**
battery with high energy density
 INVENTOR(S): Rodriguez, Rafael; Abraham, Kuzhikalail M.; Dicarlo,
 Joseph
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 11 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

Data

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004043295	A1	20040304	US 2003-645154	20030821
PRIORITY APPLN. INFO.:			US 2002-405162P	P 20020821

AB Rechargeable **composite polymer batteries** are disclosed employing **composite polymer electrolytes** comprising an inorg. oxide, exemplified by fumed SiO₂, and an organic **polymer**, exemplified by poly(vinylidene fluoride)-hexafluoropropene copolymer, gelled with Li-ion **battery electrolytes**. The **composite polymer electrolytes** are prepared by forming a suspension of the inorg. oxide in a solution of the organic **polymer** contained in a suitable carrier solvent, spraying the suspension onto the surfaces of Li-ion **battery** electrodes to form inorg. oxide-organic **polymer composite** films that adhere to the electrode surfaces, and gelling the films with Li-ion **battery electrolytes** in-situ to form **composite** inorg. oxide-organic **polymer gel electrolytes**. Li-ion **battery** cells are then constructed with the resulting electrode-**polymer electrolytes**.

IT 1344-28-1, Alumina, uses 7791-03-9, Lithium perchlorate 13463-67-7, Titania, uses 25014-41-9, Polyacrylonitrile

RL: DEV (Device component use); USES (Uses)
 (rechargeable **composite polymer battery**)

- L23 ANSWER 21 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Gel **electrolytic** precursor and manufacturing of non-aqueous secondary **battery**
- L23 ANSWER 22 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Fabrication of a **lithium** secondary **battery** comprising a superfine fibrous **polymer electrolyte**
- L23 ANSWER 23 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Fabrication of a **lithium** secondary **battery** comprising a superfine fibrous **polymer** separator film
- L23 ANSWER 24 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Fabrication of **composite polymer electrolyte** and a **lithium** secondary **battery** comprising the **composite polymer electrolyte**
- L23 ANSWER 25 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Fabrication method of **lithium** secondary **battery** with hybrid **polymer electrolyte**
- L23 ANSWER 26 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Method of producing ion conductive laminate for **electrolyte** application in **electrochemical** cells
- L23 ANSWER 27 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Polymer electrolyte** elements, manufacture of the elements and rolls of the elements, the **polymer electrolyte** element rolls, and manufacture of **batteries**
- L23 ANSWER 28 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Polymer electrolyte** membrane for use in **lithium batteries**
- L23 ANSWER 29 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI All-solid-state **electrochemical** device and method of manufacturing
- L23 ANSWER 30 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Improved **lithium** ion **polymer electrolytes** and methods of manufacturing an **electrochemical** cell
- L23 ANSWER 31 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Microporous solid **electrolytes** for **lithium** secondary **batteries**
- L23 ANSWER 32 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Solid **electrolytes** using absorbent for rechargeable **lithium batteries**
- L23 ANSWER 33 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI The characteristics of **polymer electrolyte** for

=> file reg

FILE 'REGISTRY' ENTERED AT 13:49:59 ON 21 MAY 2004
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provided by InfoChem.

STRUCTURE FILE UPDATES: 20 MAY 2004 HIGHEST RN 684211-73-2
DICTIONARY FILE UPDATES: 20 MAY 2004 HIGHEST RN 684211-73-2

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 6, 2004

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more
information enter HELP PROP at an arrow prompt in the file or refer
to the file summary sheet on the web at:
<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> file caplus

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FILE COVERS 1907 - 21 May 2004 VOL 140 ISS 22
FILE LAST UPDATED: 20 May 2004 (20040520/ED)

This file contains CAS Registry Numbers for easy and accurate
substance identification.

=> d que 123

L5 STR

P=N
1 2

NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 2

STEREO ATTRIBUTES: NONE
L6 STR

C=C
1 2

NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 2

STEREO ATTRIBUTES: NONE
L9 STR

O=Ak C=N
@3 4 @1 @2

G1 5

VAR G1=3/1/2
NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 5

STEREO ATTRIBUTES: NONE
L11 1 SEA FILE=REGISTRY ABB=ON PLU=ON 7791-03-9
L12 1 SEA FILE=REGISTRY ABB=ON PLU=ON 1344-28-1
L13 2 SEA FILE=REGISTRY ABB=ON PLU=ON "TITANIUM OXIDE"/CN
L14 SCR 2043

secondary battery

- L23 ANSWER 9 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Electrochemical** device using multicomponent **composite** membrane film
- L23 ANSWER 10 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Polyacrylonitrile **electrolytes** 1. A novel high-conductivity **composite polymer electrolyte** based on PAN, LiClO₄ and α -Al₂O₃
- L23 ANSWER 11 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI A multi-layered, UV-cured **polymer electrolyte** for **lithium secondary battery**
- L23 ANSWER 12 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Fabrication of **lithium secondary battery** with a UV-cured multi-component **polymer blend electrolyte**
- L23 ANSWER 13 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Secondary Li ion **battery** using colloidal **polymer** as **electrolyte** and its preparing process
- L23 ANSWER 14 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Multicomponent **composite** film and method for preparing the same
- L23 ANSWER 15 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**
- L23 ANSWER 16 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Fabrication method for **lithium secondary battery** with **polymer electrolyte** prepared by spray method
- L23 ANSWER 17 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI A **lithium secondary battery** comprising **composite polymer electrolyte** fabricated by a spray method
- L23 ANSWER 18 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Fabrication of a **lithium secondary battery** comprising a hybrid **polymer electrolyte** prepared by a spray method
- L23 ANSWER 19 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI A **lithium secondary battery** comprising a porous **polymer** separator film fabricated by a spray method
- L23 ANSWER 20 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Gel **electrolytic** precursor and manufacturing of non-aqueous **secondary battery**

L17 STR

CH2:CH[^]C≡N
1 2 3 4

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 4

STEREO ATTRIBUTES: NONE

L19 17649 SEA FILE=REGISTRY SSS FUL L17 AND (L5 OR L6) AND L9 AND L14
L20 35 SEA FILE=CAPLUS ABB=ON PLU=ON L19 AND L11 AND (L12 OR L13)
L23 35 SEA FILE=CAPLUS ABB=ON PLU=ON L20 AND (COMPOSIT? OR POLYMER?
OR ELECTROLY? OR ELECTROCHEM? OR BATTER? OR LITHIUM?)

=> d ti 1-35

L23 ANSWER 1 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Rechargeable **composite polymer battery** with
high energy density

L23 ANSWER 2 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Chemical sensors utilizing conducting **polymer
compositions**

L23 ANSWER 3 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Method for producing cathode for **lithium-sulfur battery**

L23 ANSWER 4 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Understanding of Effects of Nano-Al2O3 Particles on Ionic Conductivity of
Composite Polymer Electrolytes

L23 ANSWER 5 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Stable high-voltage **composite polymer
electrolytes** for secondary lithium nonaqueous-
electrolyte batteries

L23 ANSWER 6 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Polymer electrolyte** comprising fluoride copolymer for
lithium battery

L23 ANSWER 7 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Battery** structures, self-organizing structures, and related
methods

L23 ANSWER 8 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
TI Solid **composite polymer electrolyte** for

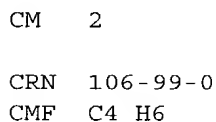
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004040841	A1	20040304	US 2002-234980	20020904
PRIORITY APPLN. INFO.:			US 2002-234980	20020904

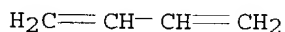
IT 9003-56-9, Polyacrylonitrile-butadiene-styrene 9010-76-8
, Polyvinylidene chloride-acrylonitrile
RL: ARG (Analytical reagent use); DEV (Device component use); ANST
(Analytical study); USES (Uses)
(chemical vapor sensing and identification by gas sensors based on
conducting **polymer compns.**)

RN 9003-56-9 CAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene (9CI) (CA
INDEX NAME)

CRN 107-13-1
CMF C3 H3 N

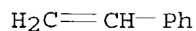




CM 3

CRN 100-42-5

CMF C8 H8



RN 9010-76-8 CAPLUS

CN 2-Propenenitrile, polymer with 1,1-dichloroethene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

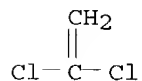
CMF C3 H3 N



CM 2

CRN 75-35-4

CMF C2 H2 Cl2



IT 1344-28-1, Alumina, analysis

RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(chemical vapor sensing and identification by gas sensors based on conducting **polymer compns.**)

RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

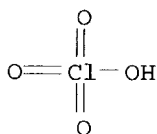
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 7791-03-9, Lithium perchlorate

RL: ARU (Analytical role, unclassified); DEV (Device component use); MOA (Modifier or additive use); ANST (Analytical study); USES (Uses)
(chemical vapor sensing and identification by gas sensors based on conducting **polymer compns.**)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC ICM G01N027-26
 NCL 204406000
 CC 79-2 (Inorganic Analytical Chemistry)
 Section cross-reference(s): 38, 59, 80
 ST conducting **polymer** gas sensor
 IT Polyamides, uses
 RL: ARG (Analytical reagent use); DEV (Device component use); ANST
 (Analytical study); USES (Uses)
 (acrylic; chemical vapor sensing and identification by gas sensors based
 on conducting **polymer compns.**)
 IT Polycarbonates, uses
 RL: ARG (Analytical reagent use); DEV (Device component use); ANST
 (Analytical study); USES (Uses)
 (bisphenol-based; chemical vapor sensing and identification by gas sensors
 based on conducting **polymer compns.**)
 IT Chemical warfare agents
 Computers
 Conducting **polymers**
 Dopants
 Electric circuits
 Electric resistance
 Gas analysis
 Gas sensors
 Heaters
 Memory devices
 Odor and Odorous substances
 Printed circuit boards
 Thermocouples
 Vapors
 (chemical vapor sensing and identification by gas sensors based on
 conducting **polymer compns.**)
 IT Volatile organic compounds
 RL: ANT (Analyte); ANST (Analytical study)
 (chemical vapor sensing and identification by gas sensors based on
 conducting **polymer compns.**)
 IT Fluoropolymers, uses
 Polyamides, uses
 Polyanilines
 Polyesters, uses

Polyoxyalkylenes, uses
Polyoxymethylenes, uses
Polysulfones, uses
Polyvinyl butyrals

RL: ARG (Analytical reagent use); DEV (Device component use); ANST
(Analytical study); USES (Uses)
(chemical vapor sensing and identification by gas sensors based on
conducting **polymer compns.**)

- IT Toxicants
(industrial; chemical vapor sensing and identification by gas sensors
based on conducting **polymer compns.**)
- IT Electrodes
(interdigitated; chemical vapor sensing and identification by gas sensors
based on conducting **polymer compns.**)

- IT Acrylic **polymers**, uses
RL: ARG (Analytical reagent use); DEV (Device component use); ANST
(Analytical study); USES (Uses)
(polyamide-; chemical vapor sensing and identification by gas sensors
based on conducting **polymer compns.**)

- IT 50-00-0, Formaldehyde, analysis 56-23-5, Tetrachloromethane, analysis
64-17-5, Ethanol, analysis 67-56-1, Methanol, analysis 67-64-1,
Acetone, analysis 67-66-3, Chloroform, analysis 71-43-2, Benzene,
analysis 79-01-6, Trichloroethylene, analysis 108-88-3, Toluene,
analysis 683-08-9, Diethylmethyl phosphonate 693-07-2, 2-Chloroethyl
ethyl sulfide 756-79-6, Dimethylmethyl phosphonate 5535-49-9,
2-Chloroethyl phenyl sulfide 7664-41-7, Ammonia, analysis 7732-18-5,
Water, analysis

RL: ANT (Analyte); ANST (Analytical study)
(chemical vapor sensing and identification by gas sensors based on
conducting **polymer compns.**)

- IT 9002-84-0, Polytetrafluoroethylene 9002-86-2, Poly vinyl chloride
9002-88-4, Polyethylene 9002-89-5, Poly vinyl alcohol 9003-01-4,
Polyacrylic acid 9003-07-0, Polypropylene 9003-07-0D, Polypropylene,
chlorinated 9003-20-7, Poly vinyl acetate 9003-39-8, Poly
N-vinylpyrrolidone 9003-42-3, Polyethyl methacrylate 9003-53-6D,
Polystyrene, chlorinated 9003-56-9, Polyacrylonitrile-butadiene-
styrene 9003-63-8, Poly-n-butyl methacrylate 9006-26-2,
Polyethylene-maleic anhydride 9008-66-6, Polyhexamethylenesecbacamide
9010-76-8, Polyvinylidene chloride-acrylonitrile 9010-77-9,
Polyethylene-acrylic acid 9011-06-7, Polyvinylidene chloride-vinyl
chloride 9011-13-6, Polystyrene/maleic anhydride 9011-14-7, Polymethyl
methacrylate 9011-15-8, Poly-isobutyl methacrylate 9011-16-9, Poly
vinyl methyl ether-maleic anhydride 9011-52-3 9011-53-4, Poly-n-butyl
methacrylate-isobutyl methacrylate 24936-74-1 24937-16-4,
Polylauro lactam 24937-78-8, Polyethylenevinyl acetate 24937-79-9,
Polyvinylidene fluoride 24979-70-2, Poly-4-vinylphenol 24980-41-4,
Poly caprolactone 25014-31-7, Poly- α -methylstyrene 25038-54-4,
Poly caprolactam, uses 25038-74-8, Polylauro lactam 25119-62-4,
Polystyrene-allyl alcohol 25233-30-1, Polyaniline 25233-34-5,
Polythiophene 25248-42-4, Poly caprolactone 25322-68-3, Polyethylene
oxide 26098-55-5, Polyhexamethylenedodecanediamide 28158-18-1
30604-81-0, Polypyrrole 32131-17-2, Polyhexamethylene adipamide, uses

59049-12-6 479355-50-5

RL: ARG (Analytical reagent use); DEV (Device component use); ANST
(Analytical study); USES (Uses)

(chemical vapor sensing and identification by gas sensors based on
conducting **polymer compns.**)

IT 1344-28-1, Alumina, analysis 7440-32-6, Titanium, analysis

RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST
(Analytical study); USES (Uses)

(chemical vapor sensing and identification by gas sensors based on
conducting **polymer compns.**)

IT 127-68-4, 3-Nitrobenzenesulfonic acid sodium salt 131-08-8,
Anthraquinone-2-sulfonic acid sodium salt 3144-16-9, Camphorsulfonic
acid 5324-84-5, 1-Octanesulfonic acid sodium salt 6149-03-7,
4-Octylbenzenesulfonic acid sodium salt 6192-52-5, p-Toluenesulfonic
acid monohydrate 7791-03-9, **Lithium** perchlorate

RL: ARU (Analytical role, unclassified); DEV (Device component use); MOA
(Modifier or additive use); ANST (Analytical study); USES (Uses)

(chemical vapor sensing and identification by gas sensors based on
conducting **polymer compns.**)

L23 ANSWER 3 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2004:119840 CAPLUS

DOCUMENT NUMBER: 140:149223

TITLE: Method for producing cathode for **lithium**
-sulfur **battery**

INVENTOR(S): Hwang, Duck-chul; Park, Zin; Lee, Jae-woan

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 11 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004029014	A1	20040212	US 2003-634748	20030806
JP 2004071566	A2	20040304	JP 2003-283959	20030731

PRIORITY APPLN. INFO.: KR 2002-46581 A 20020807

AB The invention concerns a pos. electrode of a **lithium-sulfur**
battery, a method of producing the same, and a **lithium**
-sulfur **battery** include, as the pos. electrode, a current
collector, a pos. active material layer on the current collector, and a
polymer layer on the pos. active material on the current
collector.

IT 9003-56-9

RL: DEV (Device component use); USES (Uses)

(abs rubber, method for producing cathode for **lithium-sulfur**
battery)

RN 9003-56-9 CAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene (9CI) (CA
INDEX NAME)

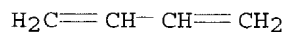
CM 1

CRN 107-13-1
CMF C3 H3 N



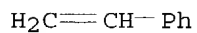
CM 2

CRN 106-99-0
CMF C4 H6



CM 3

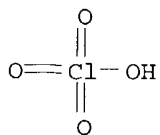
CRN 100-42-5
CMF C8 H8



IT 1344-28-1, Alumina, uses
RL: DEV (Device component use); USES (Uses)
(colloidal; method for producing cathode for **lithium-sulfur battery**)
RN 1344-28-1 CAPLUS
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

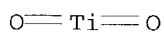
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 7791-03-9, **Lithium** perchlorate 13463-67-7,
Titanium oxide, uses 25014-41-9, Polyacrylonitrile
RL: DEV (Device component use); USES (Uses)
(method for producing cathode for **lithium-sulfur battery**)
RN 7791-03-9 CAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 13463-67-7 CAPLUS
CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)

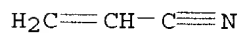


RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N

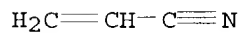


IT 9003-18-3
RL: DEV (Device component use); USES (Uses)
(nitrile rubber, method for producing cathode for lithium
-sulfur **battery**)
RN 9003-18-3 CAPLUS
CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

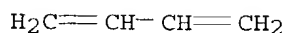
CMF C3 H3 N



CM 2

CRN 106-99-0

CMF C4 H6



IC ICM H01M002-16
ICS H01M004-60; H01M004-58
NCL 429246000; 429251000; 429252000; 429218100; 429213000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST cathode **lithium** sulfur **battery**
IT Polyurethanes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(acrylates, ethoxylated; method for producing cathode for
lithium-sulfur battery)
IT Styrene-butadiene rubber, uses
RL: DEV (Device component use); USES (Uses)
(hydrogenated, block, triblock, sulfonated; method for producing
cathode for **lithium-sulfur battery**)
IT Primary **batteries**
(**lithium**; method for producing cathode for **lithium**
-sulfur **battery**)
IT **Battery** cathodes
(method for producing cathode for **lithium-sulfur**
battery)
IT ABS rubber
Fluoropolymers, uses
Nitrile rubber, uses
Polyolefins
Polyoxyalkylenes, uses
Styrene-butadiene rubber, uses
RL: DEV (Device component use); USES (Uses)
(method for producing cathode for **lithium-sulfur**
battery)
IT **Lithium** alloy, base
RL: DEV (Device component use); USES (Uses)
(method for producing cathode for **lithium-sulfur**
battery)
IT 9003-56-9
RL: DEV (Device component use); USES (Uses)
(abs rubber, method for producing cathode for **lithium-sulfur**
battery)
IT 1344-28-1, Alumina, uses 7631-86-9, Colloidal silica, uses
RL: DEV (Device component use); USES (Uses)
(colloidal; method for producing cathode for **lithium-sulfur**
battery)
IT 10344-93-1D, Acrylate, alkyl derivative
RL: TEM (Technical or engineered material use); USES (Uses)
(ethoxylated; method for producing cathode for **lithium-sulfur**
battery)
IT 110-71-4 111-96-6, Diglyme 126-33-0, Sulfolane 646-06-0,
1,3-Dioxolane 1314-23-4, Zirconium oxide, uses 1332-29-2, Tin oxide
1332-37-2, Iron oxide, uses 7439-93-2, **Lithium**, uses

7440-44-0, Carbon, uses 7704-34-9, Sulfur, uses 7704-34-9D, Sulfur, organic compound 7791-03-9, **Lithium** perchlorate
 9002-89-5, Polyvinyl alcohol 9003-19-4, Polyvinyl ether 9003-20-7, Polyvinyl acetate 9003-22-9, Vinyl acetate-vinyl chloride copolymer 9003-39-8, Polyvinylpyrrolidone 9004-35-7, Cellulose acetate 9010-88-2, Ethyl acrylate-methylmethacrylate copolymer 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 11075-35-7, Vanadium titanium oxide 11099-11-9, Vanadium oxide 11126-12-8, Iron sulfide 12673-92-6, Titanium sulfide 12789-64-9, Iron titanate 13463-67-7, Titanium oxide, uses 14283-07-9, **Lithium** tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate 24937-79-9, PvdF 25014-41-9, Polyacrylonitrile 25086-89-9, Vinyl acetate-vinylpyrrolidone copolymer 25322-68-3, Peo 27360-07-2, Vinyl acetate-vinyl alcohol-divinyl butyral copolymer 29935-35-1, **Lithium** hexafluoroarsenate 33454-82-9, **Lithium** triflate 49717-87-5, 2-Propenoic acid, ion(1-) homopolymer, uses 49717-97-7, 2-Propenoic acid, 2-methyl-, ion(1-) homopolymer, uses 69822-67-9, Poly(carbon sulfide) 90076-65-6, **Lithium** bis(trifluoromethylsulfonyl)imide

RL: DEV (Device component use); USES (Uses)
 (method for producing cathode for **lithium-sulfur battery**)

IT 7439-95-4, Magnesium, uses 7440-21-3, Silicon, uses 7440-24-6, Strontium, uses 7440-28-0, Thallium, uses 7440-36-0, Antimony, uses 7440-38-2, Arsenic, uses 7440-56-4, Germanium, uses 7440-69-9, Bismuth, uses 7440-70-2, Calcium, uses 7440-74-6, Indium, uses 7553-56-2, Iodine, uses 7726-95-6, Bromine, uses

RL: TEM (Technical or engineered material use); USES (Uses)
 (method for producing cathode for **lithium-sulfur battery**)

IT 9003-18-3

RL: DEV (Device component use); USES (Uses)
 (nitrile rubber, method for producing cathode for **lithium-sulfur battery**)

IT 2223-82-7D, Neopentyl glycol diacrylate, ethoxylated 4491-03-6D, Bisphenol A diacrylate, ethoxylated 7429-90-5, Aluminum, uses 7440-39-3, Barium, uses 7440-42-8, Boron, uses 7723-14-0, Phosphorus, uses 7727-37-9, Nitrogen, uses 7782-41-4, Fluorine, uses 7782-44-7, Oxygen, uses 7782-50-5, Chlorine, uses 26570-48-9, Polyethylene glycol diacrylate 52496-08-9, Polypropylene glycol diacrylate

RL: TEM (Technical or engineered material use); USES (Uses)
 (protective coating; method for producing cathode for **lithium-sulfur battery**)

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber, hydrogenated, block, triblock, sulfonated; method for producing cathode for **lithium-sulfur battery**)

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber, method for producing cathode for **lithium-sulfur battery**)

L23 ANSWER 4 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:765410 CAPLUS
DOCUMENT NUMBER: 140:29424
TITLE: Understanding of Effects of Nano-Al₂O₃ Particles on
Ionic Conductivity of **Composite
Polymer Electrolytes**
AUTHOR(S): Wang, Zhaoxiang; Huang, Xuejie; Chen, Liquan
CORPORATE SOURCE: Institute of Physics, Laboratory for Solid State
Ionics, Chinese Academy of Sciences, Beijing, 100080,
Peop. Rep. China
SOURCE: Electrochemical and Solid-State Letters (2003), 6(11),
E40-E44
CODEN: ESLEF6; ISSN: 1099-0062
PUBLISHER: Electrochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Nanosized Al₂O₃ was added to a polyacrylonitrile-LiClO₄
electrolyte. IR absorption spectroscopy was used to study the
influence of Al₂O₃ on the ionic association in the **composite
electrolyte**. The nano-Al₂O₃ filler aided the dissoln. of the salt
and the dissociation of nitrile-Li⁺ interaction in the dry **composite**
. Taking into account Lewis acid-base type interactions of the surface
groups on nano-Al₂O₃ particles with the ions and with the **polymer**
and using exptl. results, an interpretation of the enhancement of ionic
conductivity and transference number of the **composite polymer
electrolyte** by the nanoscale ceramic particles, is presented.

IT 1344-28-1, Alumina, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
(effect of Al₂O₃ nanoparticles on ionic conductivity of **composite
polymer electrolytes** for lithium
batteries)

RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 25014-41-9, Polyacrylonitrile
RL: DEV (Device component use); USES (Uses)
(**electrolyte** containing; effect of Al₂O₃ nanoparticles on ionic
conductivity of **composite polymer electrolytes**
for lithium batteries)

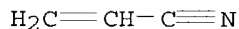
RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

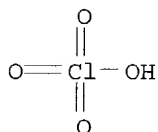
CM 1

CRN 107-13-1

CMF C3 H3 N



IT 7791-03-9, Lithium perchlorate (LiClO₄)
 RL: DEV (Device component use); USES (Uses)
 (electrolyte; effect of Al₂O₃ nanoparticles on ionic conductivity of
 composite polymer electrolytes for
 lithium batteries)
 RN 7791-03-9 CAPLUS
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 72
 ST alumina nanoparticle composite polymer
 electrolyte ionic cond lithium battery
 IT Battery electrolytes
 Ionic conductivity
 Nanoparticles
 Polymer electrolytes
 (effect of Al₂O₃ nanoparticles on ionic conductivity of composite
 polymer electrolytes for lithium
 batteries)
 IT 1344-28-1, Alumina, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)
 (effect of Al₂O₃ nanoparticles on ionic conductivity of composite
 polymer electrolytes for lithium
 batteries)
 IT 25014-41-9, Polyacrylonitrile
 RL: DEV (Device component use); USES (Uses)
 (electrolyte containing; effect of Al₂O₃ nanoparticles on ionic
 conductivity of composite polymer electrolytes
 for lithium batteries)
 IT 7791-03-9, Lithium perchlorate (LiClO₄)
 RL: DEV (Device component use); USES (Uses)
 (electrolyte; effect of Al₂O₃ nanoparticles on ionic conductivity of
 composite polymer electrolytes for
 lithium batteries)
 REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 5 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:591497 CAPLUS

DOCUMENT NUMBER: 139:152300

TITLE: Stable high-voltage **composite polymer electrolytes** for secondary **lithium nonaqueous-electrolyte batteries**

INVENTOR(S): Zaghib, Karim; Perrier, Michel; Guerfi, Abdelbast; Dupuis, Elisabeth; Charest, Patrick; Allaire, Francois; Armand, Michel

PATENT ASSIGNEE(S): Hydro-Quebec, Can.

SOURCE: PCT Int. Appl., 46 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003063287	A2	<u>20030731</u>	WO 2003-CA52	20030115
WO 2003063287	A3	20031204		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: CA 2002-2367290 A 20020116

AB A **composite polymer electrolyte** for an **electrochem. generator** (especially a secondary **lithium battery**) consists of: (1) a star-branched **polymer** with four branches containing terminating (meth)acrylate, C1-8-alkoxy, and vinyl groups, (2) polyvinylidene difluoride (mol. weight 100,000-250,000), (3) vinylidene difluoride-hexafluoropropene copolymer (mol. weight 100,000-250,000), (4) PTFE (mol. weight 200,000), (5) ethylene-propylene-5-methylene-2-norbornene copolymer or EPDM rubber, (6) polyvinyl alc. or a substituted polyvinyl alc., (7) poly(C2-3-alkoxylated) glycerol or trimethylolpropane, crosslinked and isocyanate-terminated, (8) poly(Me methacrylate) (mol. weight 50,000-500,000), (9) polyacrylonitrile (mol. weight 20,000-200,000), (10) SiO₂-Al₂O₃, and (11) TiO₂ nanoparticles, optionally coated with an organic material. The **composite polymer electrolyte**, which can be crosslinked (e.g., by radical initiators), also contains associated conducting salts, especially **lithium salts**, and organic solvents, especially carbonates, lactones, and tetra-Et sulfamide. A suitable anode for use with this **composite**

B.D.

electrolyte is preferably Al-Li alloy, Li_{4.4}Sn₂₂, Li₄Ti₅O₁₂; suitable cathodes are LiCoPo₄ or Li(Mn_{0.66}Ni_{0.34})O₂.

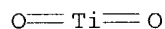
IT 1344-28-1, Alumina, uses 25014-41-9, Polyacrylonitrile
 RL: DEV (Device component use); USES (Uses)
 (composite polyelectrolyte containing; stable high-voltage
 composite polymer electrolytes for
 secondary lithium nonaq.-electrolyte
 batteries)
 RN 1344-28-1 CAPLUS
 CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 RN 25014-41-9 CAPLUS
 CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

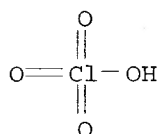
CM 1
 CRN 107-13-1
 CMF C3 H3 N



IT 13463-67-7, Titania, uses
 RL: DEV (Device component use); USES (Uses)
 (nanocryst., composite polyelectrolyte containing; stable
 high-voltage composite polymer electrolytes
 for secondary lithium nonaq.-electrolyte
 batteries)
 RN 13463-67-7 CAPLUS
 CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)



IT 7791-03-9, Lithium perchlorate
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolyte containing; stable high-voltage
 composite polymer electrolytes for
 secondary lithium nonaq.-electrolyte
 batteries)
 RN 7791-03-9 CAPLUS
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40
ICS H01G009-02; C08F290-06; C08G065-329

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST high voltage stable **polymer battery electrolyte composite**; star branched **polymer battery electrolyte composite**; EPDM rubber **polymer battery electrolyte composite**; nonaq **battery electrolyte composite polymer**

IT EPDM rubber
Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(**composite polyelectrolyte containing**; stable high-voltage **composite polymer electrolytes** for secondary lithium nonaq.-**electrolyte batteries**)

IT Polyanilines
RL: DEV (Device component use); USES (Uses)
(conducting; stable high-voltage **composite polymer electrolytes** for secondary lithium nonaq.-**electrolyte batteries**)

IT **Battery electrolytes**
(nonaq.; stable high-voltage **composite polymer electrolytes** for secondary lithium nonaq.-**electrolyte batteries**)

IT Conducting **polymers**
(polythiophenes; stable high-voltage **composite polymer electrolytes** for secondary lithium nonaq.-**electrolyte batteries**)

IT **Battery anodes**
Battery cathodes
Polymer electrolytes
(stable high-voltage **composite polymer electrolytes** for secondary lithium nonaq.-**electrolyte batteries**)

IT Acrylic **polymers**, uses
Polymers, uses
RL: DEV (Device component use); USES (Uses)
(star-branched; stable high-voltage **composite polymer electrolytes** for secondary lithium nonaq.-

- electrolyte batteries)**
- IT Capacitor electrodes
(supercapacitors; stable high-voltage **composite polymer electrolytes** for secondary **lithium nonaq.-electrolyte batteries**)
- IT **Lithium** alloy, base
RL: DEV (Device component use); USES (Uses)
(**battery anode**; stable high-voltage **composite polymer electrolytes** for secondary **lithium nonaq.-electrolyte batteries**)
- IT 12031-95-7, **Lithium** titanium oxide (Li₄Ti₅O₁₂) 37197-42-5
143295-45-8
RL: DEV (Device component use); USES (Uses)
(**battery anode**; stable high-voltage **composite polymer electrolytes** for secondary **lithium nonaq.-electrolyte batteries**)
- IT 13824-63-0, Cobalt **lithium** phosphate (CoLiPO₄) 569361-59-7,
Lithium manganese nickel oxide (LiMn_{0.66}Ni_{0.34}O₂)
RL: DEV (Device component use); USES (Uses)
(**battery cathode**; stable high-voltage **composite polymer electrolytes** for secondary **lithium nonaq.-electrolyte batteries**)
- IT 56-81-5D, Glycerol, poly(C2-3-alkoxylated) derivs., isocyanate-terminated
77-99-6D, Trimethylolpropane, poly(C2-3-alkoxylated) derivs.,
isocyanate-terminated **1344-28-1**, Alumina, uses 7631-86-9,
Silica, uses 9002-84-0, PTFE 9002-89-5, Polyvinyl alcohol
9002-89-5D, Polyvinyl alcohol, O-derivs. 9011-14-7, Polymethyl
methacrylate 9011-17-0 24937-79-9, Polyvinylidene difluoride
25014-41-9, Polyacrylonitrile 25034-77-9 570375-13-2, Elexcel
MP 210-1
RL: DEV (Device component use); USES (Uses)
(**composite polyelectrolyte** containing; stable high-voltage
composite polymer electrolytes for
secondary **lithium nonaq.-electrolyte batteries**)
- IT **13463-67-7**, Titania, uses
RL: DEV (Device component use); USES (Uses)
(nanocryst., **composite polyelectrolyte** containing; stable
high-voltage **composite polymer electrolytes**
for secondary **lithium nonaq.-electrolyte batteries**)
- IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8,
Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl
carbonate 623-53-0, Methyl ethyl carbonate 2832-49-7, Tetraethyl
sulfamide **7791-03-9**, **Lithium** perchlorate 14283-07-9,
Lithium tetrafluoroborate 21324-40-3, **Lithium**
hexafluorophosphate 29935-35-1, **Lithium** hexafluoroarsenate
33454-82-9, **Lithium** trifluoromethanesulfonate 90076-65-6
132404-42-3
RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolyte** containing; stable high-voltage
composite polymer electrolytes for

secondary lithium nonaq.-electrolyte
batteries)

L23 ANSWER 6 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:511916 CAPLUS
DOCUMENT NUMBER: 139:71608
TITLE: **Polymer electrolyte** comprising
fluoride copolymer for **lithium
battery**
INVENTOR(S): Hwang, Seung-Sik; Cho, Myung-Dong
PATENT ASSIGNEE(S): S. Korea
SOURCE: U.S. Pat. Appl. Publ., 20 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003124431	A1	20030703	US 2002-238714	20020911
CN 1412236	A	20030423	CN 2002-127041	20020726
JP 2003201319	A2	20030718	JP 2002-302629	20021017

PRIORITY APPLN. INFO.: KR 2001-63952 A 20011017

AB Provided are a fluoride copolymer, a **polymer electrolyte** comprising the fluoride copolymer, and a **lithium battery** employing the **polymer electrolyte**. The **polymer electrolyte** preferably includes as the fluoride copolymer at least one fluoride **polymer** selected from a polyethylene glycol methylether (meth)acrylate (PEGMA)-2,2,2-trifluoroethylacrylate (TFEA) **polymer**, a PEGMA-TFEA-acrylonitrile **polymer**, a PEGMA-TFEA-Me methacrylate **polymer**, a PEGMA-TFEA-vinylpyrrolidone **polymer**, a PEGMA-TFEA-trimethoxyvinylsilane **polymer**, and a PEGMA-TFEA-ethoxy ethylacrylate **polymer**.

IT 1344-28-1, Alumina, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filler; **polymer electrolyte** comprising fluoride copolymer for **lithium battery**)

RN 1344-28-1 CAPLUS

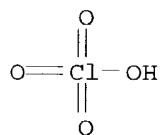
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 7791-03-9, Lithium perchlorate
RL: DEV (Device component use); USES (Uses)
(**polymer electrolyte** comprising fluoride copolymer for **lithium battery**)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 551936-02-8P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(polymer electrolyte comprising fluoride copolymer for lithium battery)

RN 551936-02-8 CAPLUS

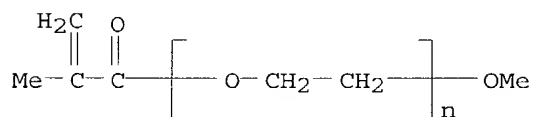
CN 2-Propenoic acid, 2,2,2-trifluoroethyl ester, polymer with α -(2-methyl-1-oxo-2-propenyl)- ω -methoxypoly(oxy-1,2-ethanediyl) and 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 26915-72-0

CMF (C2 H4 O)_n C5 H8 O2

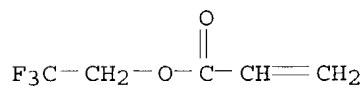
CCI PMS



CM 2

CRN 407-47-6

CMF C5 H5 F3 O2



CM 3

CRN 107-13-1

CMF C3 H3 N



IC ICM H01M010-40
ICS C08J005-20; C08F018-20

NCL 429316000; 429317000; 429309000; 429307000; 528401000; 521025000;
526246000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **polymer electrolyte fluoride copolymer lithium battery**

IT Ceramics
(filler; **polymer electrolyte** comprising fluoride copolymer for **lithium battery**)

IT Zeolites (synthetic), uses
RL: MOA (Modifier or additive use); USES (Uses)
(filler; **polymer electrolyte** comprising fluoride copolymer for **lithium battery**)

IT Secondary **batteries**
(**lithium**; **polymer electrolyte** comprising fluoride copolymer for **lithium battery**)

IT **Battery electrolytes**
Ionic conductivity
Mechanical properties
(**polymer electrolyte** comprising fluoride copolymer for **lithium battery**)

IT Fluoropolymers, uses
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(**polymer electrolyte** comprising fluoride copolymer for **lithium battery**)

IT **1344-28-1**, Alumina, uses 7631-86-9, Silica, uses 37220-89-6, **Lithium** aluminate
RL: MOA (Modifier or additive use); USES (Uses)
(filler; **polymer electrolyte** comprising fluoride copolymer for **lithium battery**)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-71-4 111-96-6, Diethylene glycol dimethyl ether 126-33-0, Sulfolane 143-24-8, Tetraethylene glycol dimethyl ether 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 646-06-0, Dioxolane 7439-93-2, **Lithium**, uses 7440-44-0, Carbon, uses 7704-34-9, Sulfur, uses 7782-42-5, Graphite, uses 7791-03-9, **Lithium** perchlorate 12057-17-9, **Lithium** manganese oxide LiMn_2O_4 12162-79-7, **Lithium** manganese oxide LiMnO_2 12190-79-3, Cobalt **lithiumoxide** CoLiO_2 14283-07-9, **Lithium** tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate 24991-55-7, Polyethylene glycol dimethyl ether 33454-82-9, **Lithium** triflate 73506-93-1, Diethoxyethane 90076-65-6
RL: DEV (Device component use); USES (Uses)
(**polymer electrolyte** comprising fluoride copolymer

for lithium battery)

IT 551936-01-7P 551936-02-8P 551936-03-9P 551936-04-0P
551936-05-1P 551936-06-2P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(polymer electrolyte comprising fluoride copolymer
for lithium battery)

L23 ANSWER 7 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:118181 CAPLUS

DOCUMENT NUMBER: 138:156304

TITLE: **Battery** structures, self-organizing
structures, and related methods

INVENTOR(S): Chiang, Yet-Ming; Moorehead, William Douglas; Holman,
Richard K.; Viola, Michael S.; Gozdz, Antoni S.;
Loxley, Andrew; Riley, Gilbert N., Jr.

PATENT ASSIGNEE(S): Massachusetts Institute of Technology, USA; A123
Systems

SOURCE: PCT Int. Appl., 138 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 4

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003012908	A2	20030213	WO 2002-US23880	20020726
WO 2003012908	C1	20040219		
WO 2003012908	C2	20040325		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,
UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG,
CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,
NE, SN, TD, TG

US 2003082446 A1 20030501 US 2001-21740 20011022

PRIORITY APPLN. INFO.: US 2001-308360P P 20010727

US 2001-21740 A 20011022

US 2000-242124P P 20001020

AB An energy storage device includes a first electrode comprising a first material and a second electrode comprising a second material, at least a portion of the first and second materials forming an interpenetrating network when dispersed in an **electrolyte**, the **electrolyte**, the first material and the second material are selected so that the first and second materials exert a repelling force on each other when combined. An **electrochem.** device, includes a first electrode in elec. communication with a first current collector; a

second electrode in elec. communication with a second current collector; and an ionically conductive medium in ionic contact with the first and second electrodes, wherein at least a portion of the first and second electrodes form an interpenetrating network and wherein at least one of the first and second electrodes comprises an electrode structure providing two or more pathways to its current collector.

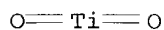
IT 13463-67-7, Titanium oxide, uses 25014-41-9, Polyacrylonitrile

RL: DEV (Device component use); USES (Uses)

(**battery** structures, self-organizing structures, and related methods)

RN 13463-67-7 CAPLUS

CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N



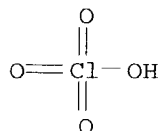
IT 7791-03-9, **Lithium** perchlorate

RL: MOA (Modifier or additive use); USES (Uses)

(**electrolyte**, cog. polyethylene oxide; **battery** structures, self-organizing structures, and related methods)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-04

ICS H01M010-40; H01M004-04; H01M004-02; H01B009-00; G02F001-00

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72

ST **battery** structure self organizing structure
IT Phosphazenes
RL: DEV (Device component use); USES (Uses)
(methoxyethoxy)ethoxy; **battery** structures, self-organizing
structures, and related methods)
IT **Battery** anodes
 Battery cathodes
 Conducting **polymers**
 Embossing
 Encapsulants
 Ink-jet printing
 Lithography
 Polymer electrolytes
 Primary **batteries**
 Screen printing
 (**battery** structures, self-organizing structures, and related
 methods)
IT Fluoropolymers, uses
Polyamines
Polyimides, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(**battery** structures, self-organizing structures, and related
methods)
IT Polyesters, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**battery** structures, self-organizing structures, and related
methods)
IT Polyesters, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**battery** structures, self-organizing structures, and related
methods)
IT Glass, uses
RL: DEV (Device component use); USES (Uses)
(bismuth **lithium** borate; **battery** structures,
self-organizing structures, and related methods)
IT **Polymers**, uses
RL: DEV (Device component use); USES (Uses)
(block, **lithium** salt-doped, **electrolyte**;
battery structures, self-organizing structures, and related
methods)
IT Electric apparatus
(**electrochem.**; **battery** structures, self-organizing
structures, and related methods)
IT Polyoxyalkylenes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(**lithium** complexes, perchlorate- or triflate-containing;
battery structures, self-organizing structures, and related
methods)
IT Secondary **batteries**
(**lithium**; **battery** structures, self-organizing
structures, and related methods)

IT **Composites**
(nanocomposite; **battery** structures, self-organizing structures, and related methods)

IT Printing (nonimpact)
(stenciling; **battery** structures, self-organizing structures, and related methods)

IT Molding
(tape-casting; **battery** structures, self-organizing structures, and related methods)

IT Coating process
(web; **battery** structures, self-organizing structures, and related methods)

IT 7439-95-4, Magnesium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(CoLiO2 doped with; **battery** structures, self-organizing structures, and related methods)

IT 7440-03-1, Niobium, uses 7440-25-7, Tantalum, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses
RL: MOA (Modifier or additive use); USES (Uses)
(FeLiPO4 doped with; **battery** structures, self-organizing structures, and related methods)

IT 7429-90-5, Aluminum, uses
RL: MOA (Modifier or additive use); USES (Uses)
(LiMnO2 doped with; **battery** structures, self-organizing structures, and related methods)

IT 68-12-2, n,n-Dimethylformamide, uses 75-11-6, Diiodomethane 96-49-1, Ethylene carbonate 105-58-8, DiEthyl carbonate 108-32-7, Propylene carbonate 616-38-6, DimEthyl carbonate 627-31-6, 1,3-Diiodopropane 1307-96-6, Cobalt oxide coo, uses 1313-13-9, Manganese oxide mno2, uses 1313-99-1, Nickel oxide nio, uses 1314-23-4, Zirconium oxide, uses 1314-62-1, Vanadia, uses 1317-34-6, Manganese oxide mn2o3 1317-35-7, Manganese oxide mn3o4 1335-25-7, Lead oxide 1344-43-0, Manganese oxidemno, uses 1345-25-1, Iron oxide feo, uses 7226-23-5 7439-93-2, **Lithium**, uses 7439-93-2D, **Lithium**, intercalation compound 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-31-5, Tin, uses 7440-36-0, Antimony, uses 7440-42-8, Boron, uses 7440-44-0, Carbon, uses 7440-56-4, Germanium, uses 7440-66-6, Zinc, uses 7440-69-9, Bismuth, uses 7782-42-5, Graphite, uses 9002-84-0, Ptfе 9003-53-6, Polystyrene 10361-43-0, Bismuth hydroxide 12002-78-7 12031-65-1, **Lithium** nickel oxide linio2 12037-30-8, Vanadium oxide v6o11 12042-37-4, Alli 12048-27-0, Bili 12057-17-9, **Lithium** manganese oxide limn2o4 12057-22-6, Lzn 12057-30-6 12057-33-9 12063-07-9, Iron **lithium** oxide fe2lio4 12162-79-7, **Lithium** manganese oxide limno2 12190-79-3, Cobalt **lithium** oxide colio2 12253-44-0 12338-02-2 12651-23-9, Titanium hydroxide 13463-67-7, Titanium oxide, uses 14475-63-9, Zirconium hydroxide 15365-14-7, Iron **lithium** phosphate felipo4 18282-10-5, Tin dioxide 21324-40-3, **Lithium** hexafluorophosphate 21651-19-4, Tin oxide sno 24937-79-9, Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile 25322-68-3, Peo 25322-69-4, Polypropylene oxide 37217-08-6, **Lithium** titanium oxide liti2o4 39345-91-0, Lead hydroxide

50851-57-5 53262-48-9 53640-36-1 55575-96-7, **Lithium**
silicide Li13Si4 55608-41-8 56627-44-2 61812-08-6, **Lithium**
silicide Li21Si8 66403-10-9, **Lithium** boride (Li5B4)
67070-82-0 71012-86-7, **Lithium** boride (Li7B6) 74083-26-4
76036-33-4, **Lithium** silicide Li12Si7 106494-93-3,
Lithium silicide Li21Si5 126213-51-2, Poly(3,4-
ethylenedioxythiophene) 136511-06-3, MEEP 144419-56-7, Cobalt
lithium magnesium oxide Co0.95LiMg0.05O2 496816-56-9
496816-57-0, Cobalt **lithium** magnesium oxide
(Co0.95Li0.95Mg0.05O1.9) 496816-58-1, Iron **lithium** zirconium
phosphate (Fe0.98LiZr0.02(PO4))
RL: DEV (Device component use); USES (Uses)
(battery structures, self-organizing structures, and related
methods)

IT 76-05-1, Trifluoroacetic acid, uses 104-15-4, Toluene sulfonic acid,
uses 7647-01-0, Hydrochloric acid, uses 57534-41-5, Zonyl FSN
RL: MOA (Modifier or additive use); USES (Uses)
(battery structures, self-organizing structures, and related
methods)

IT 9002-88-4, Polyethylene 11099-11-9, Vanadium oxide 25038-59-9, Mylar,
uses
RL: TEM (Technical or engineered material use); USES (Uses)
(battery structures, self-organizing structures, and related
methods)

IT 99742-70-8, Poly(o-methoxyaniline) 104934-51-2, Poly(3-octylthiophene)
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; battery structures, self-organizing structures, and
related methods)

IT 7440-50-8, Copper, uses
RL: DEV (Device component use); USES (Uses)
(current collector; battery structures, self-organizing
structures, and related methods)

IT 7791-03-9, **Lithium** perchlorate 33454-82-9,
Lithium triflate
RL: MOA (Modifier or additive use); USES (Uses)
(electrolyte, cog. polyethylene oxide; battery
structures, self-organizing structures, and related methods)

IT 1303-86-2, Boron oxide b2o3, uses 1304-76-3, Bismuth oxide bi2o3, uses
1314-56-3, Phosphorus pentoxide, uses 1317-36-8, Lead oxide pbo, uses
7447-41-8, **Lithium** chloride, uses 7631-86-9, Silica, uses
7789-24-4, **Lithium** fluoride, uses 10377-51-2, **Lithium**
iodide 12057-24-8, Lithia, uses
RL: DEV (Device component use); USES (Uses)
(glass; battery structures, self-organizing structures, and
related methods)

IT 7439-93-2D, **Lithium**, polyethylene oxide complexes 25322-68-3D,
Peo, **lithium** complexes
RL: MOA (Modifier or additive use); USES (Uses)
(perchlorate- or triflate-containing; battery structures,
self-organizing structures, and related methods)

L23 ANSWER 8 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:946737 CAPLUS
DOCUMENT NUMBER: 138:14325
TITLE: Solid **composite polymer electrolyte** for secondary battery
INVENTOR(S): Chen-Yang, Yui-Whei; Chen, Hung-Chang; Lin, Fu-Luo
PATENT ASSIGNEE(S): Chung Yuan Christian University, Taiwan
SOURCE: U.S. Pat. Appl. Publ., 5 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002185627	A1	20021212	US 2001-865478	20010529
PRIORITY APPLN. INFO.:			US 2001-865478	20010529

AB A solid **composite polymer electrolyte**

contains (I) a general amorphous branched **polymer** having recurrent units, each of which includes a backbone chain and at least a side chain linked to the backbone chain and containing at least one coordination potential atom, (II) an amphoteric metal salt dispersed in the branched **polymer** and forming Lewis acid-base interactions with the side chains, and (III) an amphoteric Lewis acid-base ceramic filler dispersed in the branched **polymer** and forming Lewis acid-base interactions with the side chains and the metal salt. Thus, a **polymer electrolyte** was prepared by mixing poly[bis(methoxyethoxyethoxy)phosphazene] (prepared by reacting poly(dichlorophosphazene) with 2-(2-methoxyethoxyethanol) in the presence of sodium hydride in THF) with **lithium perchlorate** and α -aluminum oxide.

IT 1344-28-1, α -Aluminum oxide, uses

RL: MOA (Modifier or additive use); USES (Uses)
(Lewis acid-base ceramic filler; preparation of solid **composite polymer electrolyte** for secondary battery)

RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

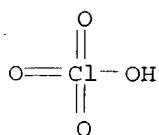
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 7791-03-9, **Lithium perchlorate**

RL: MOA (Modifier or additive use); USES (Uses)
(amphoteric metal salt; preparation of solid **composite polymer electrolyte** for secondary battery)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 25014-41-9, PAN
 RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (preparation of solid composite polymer electrolyte for secondary battery)
 RN 25014-41-9 CAPLUS
 CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)
 CM 1
 CRN 107-13-1
 CMF C3 H3 N



IC ICM H01G002-00
 ICS H01M006-18
 NCL 252062200; 429306000; 429323000
 CC 37-3 (Plastics Manufacture and Processing)
 Section cross-reference(s): 76
 ST solid composite polymer electrolyte
 secondary battery
 IT Ceramics
 (Lewis acid-base filler; preparation of solid composite polymer electrolyte for secondary battery)
 IT Polymer electrolytes
 (preparation of solid composite polymer electrolyte for secondary battery)
 IT Polyphosphazenes
 RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (preparation of solid composite polymer electrolyte for secondary battery)
 IT 1344-28-1, α -Aluminum oxide, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (Lewis acid-base ceramic filler; preparation of solid composite polymer electrolyte for secondary battery)
 IT 7791-03-9, Lithium perchlorate

RL: MOA (Modifier or additive use); USES (Uses)
(amphoteric metal salt; preparation of solid **composite polymer electrolyte** for secondary battery)

IT 111-77-3DP, 2-(2-Methoxyethoxyethanol), reaction products with poly(dichlorophosphazene) 26085-02-9DP, Poly(dichlorophosphazene), reaction products with 2-(2-methoxyethoxyethanol)

RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(preparation of solid **composite polymer electrolyte** for secondary battery)

IT 25014-41-9, PAN

RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(preparation of solid **composite polymer electrolyte** for secondary battery)

L23 ANSWER 9 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:696297 CAPLUS

DOCUMENT NUMBER: 137:204015

TITLE: **Electrochemical** device using multicomponent **composite** membrane film

INVENTOR(S): Lee, Seung-Jin; Lee, Hyang-Mok; Ahn, Soon-Ho; Cho, Jin-Yeon; Yong, Hyun-Hang; Lee, Hyung-Keun; Lee, Sang-Young; Song, Heon-Sik; Ahn, Byeong-In; Park, Soon-Yong; Kyung, You-jin

PATENT ASSIGNEE(S): LG Chem, Ltd., S. Korea; et al.

SOURCE: PCT Int. Appl., 56 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

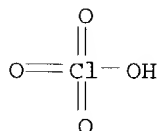
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002071509	A1	20020912	WO 2002-KR377	20020305
W: CN, JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
EP 1285468	A1	20030226	EP 2002-705524	20020305
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
US 2003104273	A1	20030605	US 2002-258170	20021022
PRIORITY APPLN. INFO.:			KR 2001-11192	A 20010305
			WO 2002-KR377	W 20020305

AB The present invention provides an **electrochem.** element, wherein a multi-component **composite** film comprising (a) **polymer** support layer film and (b) a porous gellable **polymer** layer which is formed on either or both sides of the support layer film of (a), wherein the support layer film of (a) and the gellable **polymer** layer of (b) are unified with each other without an interface between

them.

IT 7791-03-9, Lithium perchlorate 25014-41-9,
Polyacrylonitrile
RL: DEV (Device component use); USES (Uses)
(**electrochem.** device using multicomponent **composite**
membrane film)
RN 7791-03-9 CAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

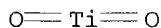
CRN 107-13-1
CMF C3 H3 N



IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses
RL: MOA (Modifier or additive use); USES (Uses)
(**electrochem.** device using multicomponent **composite**
membrane film)
RN 1344-28-1 CAPLUS
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 CAPLUS
CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M002-14
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **battery** multicomponent **composite** membrane film
IT Polyesters, uses

RL: DEV (Device component use); USES (Uses)
 (acrylates; **electrochem.** device using multicomponent
composite membrane film)

IT Secondary **batteries**
 Secondary **battery** separators
 (**electrochem.** device using multicomponent **composite**
 membrane film)

IT Fluoropolymers, uses
 Polyamides, uses
 Polycarbonates, uses
 Polyesters, uses
 Polyoxyalkylenes, uses
 Polyoxyphenylenes
 Polysiloxanes, uses
 Polysulfones, uses
 Polyurethanes, uses

RL: DEV (Device component use); USES (Uses)
 (**electrochem.** device using multicomponent **composite**
 membrane film)

IT Polyolefins
 RL: DEV (Device component use); USES (Uses)
 (ionomers; **electrochem.** device using multicomponent
composite membrane film)

IT Ionomers
 RL: DEV (Device component use); USES (Uses)
 (polyolefins; **electrochem.** device using multicomponent
composite membrane film)

IT **Polymers**, uses
 RL: DEV (Device component use); USES (Uses)
 (porous gellable; **electrochem.** device using multicomponent
composite membrane film)

IT 556-65-0, **Lithium** thiocyanate 7791-03-9,
Lithium perchlorate 9002-85-1, Polyvinylidene chloride
 9002-88-4, Polyethylene 9003-01-4, Polyacrylic acid 9003-05-8,
 Polyacrylamide 9003-07-0, Polypropylene 9003-20-7, Polyvinyl acetate
 9003-39-8, Polyvinylpyrrolidone 9003-53-6, Polystyrene 9010-75-7,
 Chlorotrifluoroethylene-vinylidene fluoride copolymer 9010-79-1,
 Ethylene-propylene copolymer 9011-14-7, Pmma 9011-17-0,
 Hexafluoropropylene-vinylidene fluoride copolymer 9016-80-2, Polymethyl
 pentene 9019-29-8, Ethylene-butylene copolymer 9041-80-9,
 Polyphenylene oxide 14283-07-9, **Lithium** tetrafluoroborate
 24937-79-9, Polyvinylidene fluoride 25014-41-9,
 Polyacrylonitrile 25190-06-1, Polybutylene oxide 25322-68-3, Peo
 25322-69-4, Polypropylene oxide 25568-84-7D, Polycyclopentadiene,
 hydrogenated 29935-35-1, **Lithium** hexafluoroarsenate
 33454-82-9, **Lithium** triflate 39410-01-0, Butylene-styrene
 copolymer 57271-36-0, Butylene-ethylene-styrene copolymer 57619-91-7,
 Polytetraethylene glycol diacrylate 70800-37-2, Ethylene-octene
 copolymer 88117-78-6, Ethylene-hexene copolymer 90076-65-6

RL: DEV (Device component use); USES (Uses)
 (**electrochem.** device using multicomponent **composite**
 membrane film)

IT 1303-86-2, Boron oxide b2o3, uses 1309-48-4, Magnesia, uses
1344-28-1, Alumina, uses 7631-86-9, Silica, uses
13463-67-7, Titania, uses
RL: MOA (Modifier or additive use); USES (Uses)
(electrochem. device using multicomponent composite
membrane film)

IT 60-29-7, Diethyl ether, uses 64-17-5, Ethanol, uses 64-19-7, Acetic
acid, uses 67-64-1, Acetone, uses 67-68-5, DmsO, uses 68-12-2, Dmf,
uses 71-23-8, n-Propanol, uses 71-36-3, n-Butanol, uses 71-43-2,
Benzene, uses 108-88-3, Toluene, uses 108-93-0, Cyclohexanol, uses
109-99-9, Thf, uses 110-54-3, n-Hexane, uses 110-82-7, Cyclohexane,
uses 123-91-1, Dioxane, uses 127-19-5, Dimethyl acetamide 141-78-6,
Ethyl acetate, uses 872-50-4, 1-Methyl-2-pyrrolidone, uses 1330-20-7,
Xylene, uses 7732-18-5, Water, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(electrochem. device using multicomponent composite
membrane film)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 10 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:668076 CAPLUS

DOCUMENT NUMBER: 138:41901

TITLE: Polyacrylonitrile **electrolytes** 1. A novel
high-conductivity **composite polymer**
electrolyte based on PAN, LiClO₄ and
 α -Al₂O₃

AUTHOR(S): Chen-Yang, Y. W.; Chen, H. C.; Lin, F. J.; Chen, C. C.
CORPORATE SOURCE: Department of Chemistry and Center for Nanotechnology
at CYCU, Chung Yuan Christian University, Taichung,
32023, Taiwan

SOURCE: Solid State Ionics (2002), 150(3,4), 327-335
CODEN: SSIOD3; ISSN: 0167-2738

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB In this work, a series of novel solid-type α -Al₂O₃-containing
polyacrylonitrile (PAN)-based **composite polymer**
electrolytes (CPE) with high conductivity and high mech. property at room
temperature has been prepared The effect of the addition of α -Al₂O₃ on the
properties of the PAN-based **composite polymer**
electrolyte has been analyzed. The best conductivities obtained
at room temperature is 5.7×10^{-4} S cm⁻¹ from the CPE with 7.5 weight%
 α -Al₂O₃ and 0.6 LiClO₄ per PAN repeat unit. The stress-strain test
result indicates that the membranes prepared possess high yield stress (73
kg cm⁻²) suitable for serving as separators in the solid-state
lithium and **lithium** ion **batteries** and high
yield elongation (225%) pliable to form good interface with electrodes.
Also discussed are the effects of the addition of the ceramics on the
interactions in the system and the possible conduction mechanism.

IT 1344-28-1, Alumina, processes 7791-03-9, **Lithium**
perchlorate 25014-41-9, Polyacrylonitrile

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)

(high-conductivity **composite polymer electrolyte**
based on polyacrylonitrile, LiClO₄ and α-Al₂O₃)

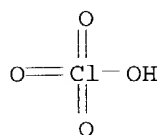
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery electrolyte** alumina polyacrylonitrile
lithium perchlorate

IT **Battery electrolytes**

Fuel cell separators

(high-conductivity **composite polymer electrolyte**
based on polyacrylonitrile, LiClO₄ and α-Al₂O₃)

IT 1344-28-1, Alumina, processes 7791-03-9, Lithium
perchlorate 25014-41-9, Polyacrylonitrile

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)

(high-conductivity **composite polymer electrolyte**
based on polyacrylonitrile, LiClO₄ and α-Al₂O₃)

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 11 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:595200 CAPLUS

DOCUMENT NUMBER: 137:143066
 TITLE: A multi-layered, UV-cured **polymer electrolyte** for **lithium secondary battery**
 INVENTOR(S): Yun, Kyung-Suk; Cho, Byung-Won; Cho, Won-Il; Kim, Hyung-Sun; Kim, Un-Sek; Rhee, Hee-Woo; Kim, Yong-Tae
 PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S. Korea
 SOURCE: PCT Int. Appl., 40 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002061874	A1	20020808	WO 2001-KR133	20010131
W: JP, KR, US				
US 2003180623	A1	20030925	US 2003-275383	<u>20030522</u>

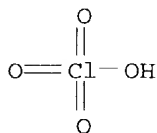
PRIORITY APPLN. INFO.: WO 2001-KR133 W 20010131

AB The present invention relates to a multi-layered, UV-cured **polymer electrolyte** and **lithium secondary battery** comprising the same, wherein the **polymer electrolyte** comprises: (A) a separator layer formed of **polymer electrolyte**, PP, PE, PVdF or non-woven fabric, wherein the separator layer having two surfaces; (B) at least one gelled **polymer electrolyte** layer located on at least one surface of the separator layer comprising: (a) **polymer** obtained by curing ethyleneglycoldi(meth)acrylate oligomer of the formula by UV irradiation: $\text{CH}_2=\text{CR}_1\text{COO}(\text{CH}_2\text{CH}_2\text{O})_n\text{COCR}_2=\text{CH}_2$ wherein, R1 and R2 are independently hydrogen or Me group, and n is a integer of 3-20; and (b) at least one **polymer** selected from the group consisting of PVdF-based **polymer**, PAN-based **polymer**, PMMA-based **polymer** and PVC-based **polymer**; and (C) organic **electrolyte** solution in which **lithium** salt is dissolved in a solvent.

IT 7791-03-9, **Lithium perchlorate** 9003-00-3, Acrylonitrile-vinyl chloride copolymer 24968-79-4, Acrylonitrile-methylacrylate copolymer 25014-41-9, Polyacrylonitrile
 RL: DEV (Device component use); USES (Uses)
 (multilayered, UV-cured **polymer electrolyte** for **lithium secondary battery**)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

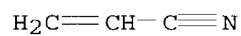


● Li

RN 9003-00-3 CAPLUS
CN 2-Propenenitrile, polymer with chloroethene (9CI) (CA INDEX NAME)

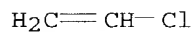
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

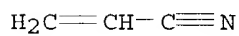
CRN 75-01-4
CMF C2 H3 Cl



RN 24968-79-4 CAPLUS
CN 2-Propenoic acid, methyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

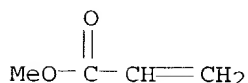
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 96-33-3
CMF C4 H6 O2



RN 25014-41-9 CAPLUS
 CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N



IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (porous filler; multilayered, UV-cured **polymer electrolyte** for lithium secondary battery)

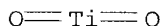
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 CAPLUS

CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38

ST **lithium secondary battery UV cured polymer electrolyte**

IT Secondary batteries
 (lithium; multilayered, UV-cured **polymer electrolyte** for lithium secondary battery)

IT **Battery electrolytes**
Polymer electrolytes
 (multilayered, UV-cured **polymer electrolyte** for lithium secondary battery)

IT Coke
 Fluoropolymers, uses
Polymer blends
 RL: DEV (Device component use); USES (Uses)
 (multilayered, UV-cured **polymer electrolyte** for lithium secondary battery)

IT Crosslinking

(photochem.; multilayered, UV-cured **polymer electrolyte for lithium secondary battery**)

IT Fluoropolymers, uses
Polymers, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (porous filler; multilayered, UV-cured **polymer electrolyte for lithium secondary battery**)

IT **Lithium** alloy, base
 RL: DEV (Device component use); USES (Uses)
 (multilayered, UV-cured **polymer electrolyte for lithium secondary battery**)

IT 102-71-6, Triethanolamine, uses 102-82-9, Tributylamine 103-83-3, n-Benzyl dimethylamine 121-44-8, Triethylamine, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (UV curing accelerator; multilayered, UV-cured **polymer electrolyte for lithium secondary battery**)

IT 84-51-5, 2-Ethyl Anthraquinone 84-65-1, Anthraquinone 93-97-0, Benzoyl benzoate 119-61-9, Benzophenone, uses 120-51-4, Benzyl benzoate 131-09-9, 2-Chloro Anthraquinone 492-22-8, Thioxanthone 574-09-4, Ethyl benzoin ether 947-19-3, 1-Hydroxycyclohexyl phenyl ketone 2648-61-5 3524-62-7 5293-97-0, 2,2'-Dichlorobenzophenone 6175-45-7, 2,2-Diethoxyacetophenone 6652-28-4, Isopropyl benzoin ether 6652-29-5, Benzoin phenyl ether 7473-98-5, 2-Hydroxy-2-methyl-1-phenylpropane-1-one 7624-24-0 7727-54-0, Ammonium persulfate 24650-42-8, 2,2-Dimethoxy-2-phenylacetophenone 72896-34-5, Chlorothioxanthone 75081-21-9, Isopropyl thioxanthone
 RL: MOA (Modifier or additive use); USES (Uses)
 (UV curing initiator; multilayered, UV-cured **polymer electrolyte for lithium secondary battery**)

IT 7440-44-0, Carbon, uses
 RL: DEV (Device component use); USES (Uses)
 (hard; multilayered, UV-cured **polymer electrolyte for lithium secondary battery**)

IT 68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses 79-20-9, Methyl acetate 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-37-3, Ethyl propionate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 127-19-5, Dimethyl acetamide 141-78-6, Ethyl acetate, uses 554-12-1, Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 1314-62-1, Vanadium pentoxide, uses 1332-29-2, Tin oxide 4437-85-8, Butylene carbonate 7439-93-2, **Lithium**, uses 7782-42-5, Graphite, uses 7791-03-9, **Lithium** perchlorate 9002-86-2, Polyvinyl chloride 9002-88-4, Polyethylene 9003-00-3, Acrylonitrile-vinyl chloride copolymer 9003-07-0, Polypropylene 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer 9011-14-7, Pmma 9011-17-0, Kynar 2801 9056-77-3, Poly(ethylene glycol methacrylate) 12031-65-1, **Lithium** nickel oxide linio2 12037-42-2, Vanadium oxide v6o13 12190-79-3, Cobalt **lithium** oxide colio2 14283-07-9, **Lithium** tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate 24937-79-9, PvdF 24968-79-4, Acrylonitrile-methylacrylate copolymer 25014-41-9, Polyacrylonitrile 25086-15-1, Methacrylic

acid-methyl methacrylate copolymer 29935-35-1, **Lithium**
hexafluoroarsenate 33454-82-9, **Lithium** triflate 90076-65-6
162004-08-2, Cobalt **lithium** nickel oxide colinio2

RL: DEV (Device component use); USES (Uses)

(multilayered, UV-cured **polymer electrolyte** for
lithium secondary battery)

IT 554-13-2 1304-28-5, Baria, uses 1309-48-4, Magnesia, uses 1310-65-2,
Lithium hydroxide (Li(OH)) 1313-59-3, Sodium oxide, uses
1344-28-1, Alumina, uses 7631-86-9, Silica, uses 7789-24-4,
Lithium fluoride, uses 9002-84-0, Ptfе 12003-67-7, Aluminum
lithium oxide alio2 12047-27-7, Barium titanium oxide batio3,
uses 12057-24-8, Lithia, uses 13463-67-7, Titania, uses
26134-62-3, **Lithium** nitride (Li3N)

RL: MOA (Modifier or additive use); USES (Uses)

(porous filler; multilayered, UV-cured **polymer**
electrolyte for **lithium secondary battery**)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 12 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:595199 CAPLUS

DOCUMENT NUMBER: 137:143065

TITLE: Fabrication of **lithium secondary**
battery with a UV-cured multi-component
polymer blend electrolyte

INVENTOR(S): Cho, Byung-Won; Cho, Won-Il; Kim, Hyung-Sun; Kim,
Un-Sek; Rhee, Hee-Woo; Kim, Yong-Tae; Song, Min-Kyu
PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S. Korea
SOURCE: PCT Int. Appl., 35 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

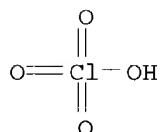
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002061873	A1	20020808	WO 2001-KR130	20010131
W: JP, KR, US				

PRIORITY APPLN. INFO.: WO 2001-KR130 20010131

AB The present invention relates to a UV-cured multi-component
polymer blend electrolyte, lithium secondary
battery and their fabrication method, wherein the UV-cured
multi-component **polymer blend electrolyte**, comprises:
(A) function-I **polymer** obtained by curing ethylene glycol
dimethacrylate oligomer of formula by UV irradiation,
CH₂=CR₁COO(CH₂CH₂O)_nCOCR₂=CH₂ wherein, R₁ and R₂ are independently a
hydrogen or Me group, and n is an integer of 3-20; (B) function-II
polymer selected from the group consisting of PAN-based
polymer, PMMA-based **polymer** and mixts. thereof; (C)
function-III **polymer** selected from the group consisting of
PVdF-based **polymer**, PVC-based **polymer** and mixts.

thereof; and (D) organic **electrolyte** solution in which **lithium** salt is dissolved in a solvent.

IT 7791-03-9, **Lithium** perchlorate 9003-00-3,
 Acrylonitrile-vinyl chloride copolymer 24968-79-4,
 Acrylonitrile-methylacrylate copolymer 25014-41-9,
 Polyacrylonitrile
 RL: DEV (Device component use); USES (Uses)
 (fabrication of **lithium** secondary **battery** with
 UV-cured multi-component **polymer** blend **electrolyte**)
 RN 7791-03-9 CAPLUS
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

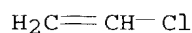


● Li

RN 9003-00-3 CAPLUS
 CN 2-Propenenitrile, polymer with chloroethene (9CI) (CA INDEX NAME)
 CM 1
 CRN 107-13-1
 CMF C3 H3 N



CM 2
 CRN 75-01-4
 CMF C2 H3 Cl



RN 24968-79-4 CAPLUS
 CN 2-Propenoic acid, methyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)
 CM 1
 CRN 107-13-1

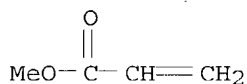
CMF C3 H3 N



CM 2

CRN 96-33-3

CMF C4 H6 O2



RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N



IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses
RL: MOA (Modifier or additive use); USES (Uses)
(porous filler; fabrication of **lithium** secondary
battery with UV-cured multi-component **polymer** blend
electrolyte)

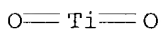
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 CAPLUS

CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **lithium** secondary **battery** fabrication UV cured
polymer blend **electrolyte**

IT **Battery electrolytes**

Polymer electrolytes
 (fabrication of **lithium** secondary battery with
 UV-cured multi-component **polymer** blend **electrolyte**)

IT Coke

Polymer blends
 RL: DEV (Device component use); USES (Uses)
 (fabrication of **lithium** secondary battery with
 UV-cured multi-component **polymer** blend **electrolyte**)

IT **Polymers**, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (fillers; fabrication of **lithium** secondary battery
 with UV-cured multi-component **polymer** blend
electrolyte)

IT **Secondary batteries**
 (**lithium**; fabrication of **lithium** secondary
 battery with UV-cured multi-component **polymer** blend
electrolyte)

IT Crosslinking
 (photochem.; fabrication of **lithium** secondary battery
 with UV-cured multi-component **polymer** blend
electrolyte)

IT Fluoropolymers, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (porous filler; fabrication of **lithium** secondary
 battery with UV-cured multi-component **polymer** blend
electrolyte)

IT **Lithium** alloy, base
 RL: DEV (Device component use); USES (Uses)
 (fabrication of **lithium** secondary battery with
 UV-cured multi-component **polymer** blend **electrolyte**)

IT 84-51-5, 2-EthylAnthraquinone 84-65-1, Anthraquinone 93-97-0, Benzoyl
 benzoate 119-61-9, Benzophenone, uses 120-51-4, Benzyl benzoate
 131-09-9, 2-Chloroanthraquinone 492-22-8, Thioxanthone 574-09-4, Ethyl
 benzoin ether 947-19-3, 1-Hydroxycyclohexyl phenyl ketone 2648-61-5
 5293-97-0, 2,2'-Dichlorobenzophenone 6175-45-7, 2,2-Diethoxyacetophenone
 6652-29-5, Benzoin phenyl ether 7473-98-5, 2-Hydroxy-2-methyl-1-
 phenylpropane-1-one 7624-24-0 7727-54-0, Ammonium persulfate
 24650-42-8, 2,2-Dimethoxy-2-phenylacetophenone 72896-34-5,
 Chlorothioxanthone 75081-21-9, Isopropyl thioxanthone
 RL: MOA (Modifier or additive use); USES (Uses)
 (UV curing initiator; fabrication of **lithium** secondary
 battery with UV-cured multi-component **polymer** blend
electrolyte)

IT 68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses 79-20-9, Methyl acetate
 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-37-3,
 Ethyl propionate 105-58-8, Diethyl carbonate 108-32-7, Propylene
 carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane
 127-19-5, Dimethyl acetamide 141-78-6, Ethyl acetate, uses 554-12-1,
 Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl
 carbonate 1314-62-1, Vanadia, uses 1332-29-2, Tin oxide 4437-85-8,
 Butylene carbonate 7439-93-2, **Lithium**, uses 7782-42-5,
 Graphite, uses 7791-03-9, **Lithium** perchlorate

9002-86-2, Polyvinyl chloride 9003-00-3, Acrylonitrile-vinyl chloride copolymer 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer 9011-14-7, Pmma 9011-17-0, Kynar 2801 12031-65-1, **Lithium** nickel oxide linio2 12037-42-2, Vanadium oxidev6o13 12057-17-9, **Lithium** manganese oxide limn2o4 12190-79-3, Cobalt **lithium** oxide colio2 14283-07-9, **Lithium** tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate 24968-79-4, Acrylonitrile-methylacrylate copolymer 25014-41-9, Polyacrylonitrile 25086-15-1, Methacrylic acid-methyl methacrylate copolymer 26570-48-9, Polyethylene glycol diacrylate 29935-35-1, **Lithium** hexafluoroarsenate 33454-82-9, **Lithium** triflate 90076-65-6 162004-08-2, Cobalt **lithium** nickel oxide colinio2

RL: DEV (Device component use); USES (Uses)
(fabrication of **lithium** secondary **battery** with UV-cured multi-component **polymer** blend **electrolyte**)

IT 7440-44-0, Carbon, uses

RL: DEV (Device component use); USES (Uses)
(hard; fabrication of **lithium** secondary **battery** with UV-cured multi-component **polymer** blend **electrolyte**)

IT 554-13-2 1304-28-5, Barium oxide (BaO), uses 1309-48-4, Magnesium oxide (MgO), uses 1310-65-2, **Lithium** hydroxide (Li(OH)) 1313-59-3, Sodium oxide (Na2O), uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 7789-24-4, **Lithium** fluoride, uses 9002-84-0, Ptfе 12003-67-7, Aluminum **lithium** oxide allio2 12047-27-7, Barium titanium oxide batio3, uses 12057-24-8, Lithia, uses 13463-67-7, Titania, uses 26134-62-3, **Lithium** nitride (Li3N)

RL: MOA (Modifier or additive use); USES (Uses)
(porous filler; fabrication of **lithium** secondary **battery** with UV-cured multi-component **polymer** blend **electrolyte**)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 13 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:585696 CAPLUS

DOCUMENT NUMBER: 137:111647

TITLE: Secondary Li ion **battery** using colloidal **polymer** as **electrolyte** and its preparing process

INVENTOR(S): Gu, Hui; Huang, Xuejie; Chen, Liquan

PATENT ASSIGNEE(S): Inst. of Physics, Chinese Academy of Sciences, Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 33 pp.
CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1315752	A	20011003	CN 2000-105541	20000330
PRIORITY APPLN. INFO.:			CN 2000-105541	20000330

AB The **battery** consists of an anode with a carbonaceous material as active material, a cathode with LiCoO₂, LiNiO₂, or LiMn₂O₄ as active material, colloidal **polymer electrolyte**, **polymer** separator, etc. The colloidal **polymer electrolyte** is prepared from: (1) monomers such as Me methacrylate, Bu methacrylate, isooctyl methacrylate, allyl methacrylate, Me acrylate, Et acrylate, Bu acrylate, polyethylene glycol alkyl ether monoacrylate, polyethylene glycol diacrylate, polyethylene glycol alkyl ether monomethacrylate, or polyethylene glycol dimethacrylate, (2) solvent for the **electrolyte** such as ethylene carbonate, propylene carbonate, di-Me carbonate, di-Et carbonate, ethylmethyl carbonate, or dimethoxyethane, (3) soluble Li salt such as LiN(CF₃SO₂)₃, LiClO₄, LiBF₄, LiPF₆, LiCF₃SO₃, LiNH(CF₃SO₂)₂, or LiAsF₆, (4) initiators such as AIBN, 2,2'-azobis(isoheptyronitrile), 2-tert-Bu oxide, dicumyl peroxide, benzoyl superoxide, dilauroyl peroxide, isopropylbenzene hydroperoxide, diisopropyl pyrocarbonate, dicyclohexyl pyrocarbonate, cyclohexane carboxylate, organometallic compds., triethylboron, combination of benzoyl superoxide and N,N-di-Me aniline, benzoin iso-Bu ether, benzoin iso-Pr ether, benzoin Me ether, benzoin Et ether, benzophenone, acetophenone, diethoxyacetophenone, etc., (5) nanometer SiO₂ or Al₂O₃, amorphous film separator of **polymers** such as polypropylene, polyethylene, poly(vinylidene fluoride), PAN, or fiber- or powder- reinforced polyethylene glycol.

IT 1344-28-1, Alumina, uses 7791-03-9, **Lithium** perchlorate 25014-41-9, PAN (**polymer**)
 RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (secondary Li ion **battery** using colloidal **polymer** as **electrolyte** and preparing process)

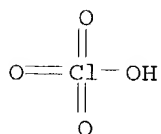
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N



IC ICM H01M010-40

ICS H01M010-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **lithium ion battery colloidal polymer electrolyte**

IT Polyoxyalkylenes, uses

RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)

(alkyl ether mono(meth)acrylate; secondary Li ion **battery** using colloidal **polymer** as **electrolyte** and preparing process)

IT Secondary **batteries**

(**lithium**; secondary Li ion **battery** using colloidal **polymer** as **electrolyte** and preparing process)

IT **Battery** anodes

Battery cathodes

Colloids

Polymer electrolytes

Secondary **battery** separators

(secondary Li ion **battery** using colloidal **polymer** as **electrolyte** and preparing process)

IT Carbonaceous materials (technological products)

Fluoropolymers, uses

Polyoxyalkylenes, uses

RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(secondary Li ion **battery** using colloidal **polymer** as **electrolyte** and preparing process)

IT 78-67-1, AIBN 80-15-9, Isopropylbenzene hydroperoxide 80-43-3, Dicumyl peroxide 94-36-0, Benzoyl superoxide, uses 96-49-1, Ethylene carbonate 97-94-9, Triethylboron 98-86-2, Acetophenone, uses 105-58-8, Diethyl carbonate 105-74-8, Dilauroyl peroxide 108-32-7, Propylene carbonate 110-05-4, Bis(tert-Butyl) peroxide 110-71-4 119-61-9, Benzophenone, uses 121-69-7, N,N-Dimethyl aniline, uses 574-09-4, Benzoin ethyl ether 616-38-6, Dimethyl carbonate 623-53-0, Ethylmethyl carbonate 1344-28-1, Alumina, uses 3198-23-0, Cyclohexane carboxylate 3524-62-7, Benzoin methyl ether 6175-45-7, Diethoxyacetophenone 6652-28-4, Benzoin isopropyl ether 7631-86-9, Silica, uses 7791-03-9, **Lithium** perchlorate 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9011-17-0, Vinylidene fluoride-

hexafluoropropene copolymer 12031-65-1, **Lithium** nickel oxide (LiNiO₂) 12057-17-9, **Lithium** manganese oxide (LiMn₂O₄) 12190-79-3, Cobalt **lithium** oxide (LiCoO₂) 14283-07-9, **Lithium** tetrafluoroborate (LiBF₄) 15545-95-6 21324-40-3, **Lithium** hexafluorophosphate (LiPF₆) 22499-12-3, Benzoin isobutyl ether 24425-00-1, Diisopropyl pyrocarbonate 24937-79-9, Poly(vinylidene fluoride) **25014-41-9**, PAN (**polymer**) 25322-68-3, Poly(ethylene glycol) 29935-35-1, **Lithium** hexafluoroarsenate (LiAsF₆) 33454-82-9 61114-49-6, Dicyclohexyl pyrocarbonate 90076-65-6
 RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(secondary Li ion **battery** using colloidal **polymer** as **electrolyte** and preparing process)

IT 80-62-6, Methyl methacrylate 96-05-9, Allyl methacrylate 96-33-3, Methyl acrylate 97-63-2, Ethyl methacrylate 97-86-9, IsoButyl methacrylate 97-88-1, Butyl methacrylate 140-88-5, Ethyl acrylate 141-32-2, Butyl acrylate 2210-28-8, Propyl methacrylate 25322-68-3D, Polyethylene glycol, alkyl ether mono(meth)acrylate 25721-76-0, Polyethylene glycol dimethacrylate 28158-16-9, Poly(ethylene glycol diacrylate) 28675-80-1, Isooctyl methacrylate
 RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)

(secondary Li ion **battery** using colloidal **polymer** as **electrolyte** and preparing process)

note

L23 ANSWER 14 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:143078 CAPLUS

DOCUMENT NUMBER: 136:201311

TITLE: Multicomponent **composite** film and method for preparing the same

INVENTOR(S): Lee, Seung-Jin; Lee, Hyang-Mok; Ahn, Soon-Ho; Cho, Jin-Yeon; Yong, Hyun-Hang; Lee, Hyung-Keun; Lee, Sang-Young; Song, Heon-Sik; Park, Soon-Yong; Kyung, You-Jin; Ahn, Byeong-In

PATENT ASSIGNEE(S): LG Chemical Co., Ltd., S. Korea

SOURCE: PCT Int. Appl., 34 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002015299	A1	<u>20020221</u>	WO 2001-KR1374	20010811
W: CN, JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
EP 1310005	A1	<u>20030514</u>	EP 2001-958588	20010811
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				

IE, FI, CY, TR

JP 2004506542 T2 20040304 JP 2002-520328 20010811
 US 2002187401 A1 ~~20021212~~ US 2002-110047 ~~20020405~~
 PRIORITY APPLN. INFO.: KR 2000-46735 A 20000812
 KR 2001-11191 A 20010305
 WO 2001-KR1374 W 20010811

AB The present invention provides a multi-component **composite** film comprising (a) **polymer** support layer (e.g., polypropylene); and (b) porous gelable **polymer** layer (e.g., polyvinylidene fluoride) which is formed on one side or both sides of the support layer of (a), wherein the support film of (a) and the gelable **polymer** layer of (b) are unified without the interface, a method for preparing the same, and a **polymer electrolyte** system applied the same.

IT 1344-28-1, Alumina, uses 7791-03-9, **Lithium** perchlorate LiClO₄ 13463-67-7, Titania, uses
 RL: MOA (Modifier or additive use); USES (Uses)

(multicomponent **composite** film and method for preparing the same)

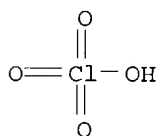
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7791-03-9 CAPLUS

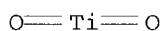
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 13463-67-7 CAPLUS

CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)



IT 25014-41-9, Polyacrylonitrile

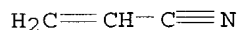
RL: TEM (Technical or engineered material use); USES (Uses)
 (multicomponent **composite** film and method for preparing the same)

RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C3 H3 N



- IC ICM H01M002-16
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 52
ST multicomponent **composite polymer** film
electrolyte
IT Electric apparatus
(**electrochem.**; multicomponent **composite** film and
method for preparing the same)
IT Styrene-butadiene rubber, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(hydrogenated, block, triblock; multicomponent **composite** film
and method for preparing the same)
IT Fuel cells
Polymer electrolytes
Primary **batteries**
Secondary **batteries**
Sensors
(multicomponent **composite** film and method for preparing the
same)
IT Fluoropolymers, uses
Ionomers
Linear low density polyethylenes
Polyamides, uses
Polycarbonates, uses
Polyesters, uses
Polyoxyalkylenes, uses
Polyoxyphenylenes
Polysiloxanes, uses
Polysulfones, uses
Polyurethanes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(multicomponent **composite** film and method for preparing the
same)
IT Capacitors
(ultra; multicomponent **composite** film and method for preparing
the same)
IT 556-65-0, **Lithium** thiocyanate LiSCN 1303-86-2, Boron oxide
B2O3, uses 1309-48-4, Magnesium oxide (MgO), uses 1344-28-1,
Alumina, uses 7631-86-9, Silica, uses 7791-03-9,
Lithium perchlorate LiClO4 13463-67-7, Titania, uses
14283-07-9, **Lithium** tetrafluoroborate LiBF4 29935-35-1,
Lithium hexafluoroarsenate LiAsF6 33454-82-9, **Lithium**
trifluoromethanesulfonate 90076-65-6
RL: MOA (Modifier or additive use); USES (Uses)
(multicomponent **composite** film and method for preparing the

same)

IT 74-85-1D, Ethene, **polymers** with α -olefins 9002-85-1, Polyvinylidene chloride 9002-88-4, Polyethylene 9003-01-4, Polyacrylic acid 9003-05-8, Polyacrylamide 9003-07-0, Polypropylene 9003-20-7, Polyvinyl acetate 9003-39-8, Polyvinylpyrrolidone 9003-53-6, Polystyrene 9010-75-7, Chlorotrifluoroethylene-vinylidene fluoride copolymer 9010-79-1, Ethylene-propylene copolymer 9011-14-7, Polymethyl methacrylate 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 9016-80-2, Polymethyl pentene 24937-79-9, Polyvinylidene fluoride **25014-41-9**, Polyacrylonitrile 25087-34-7, Ethylene-1-butylencopolymer 25190-06-1, Polybutylene oxide 25213-02-9, Ethylene-hexene copolymer 25322-68-3, Polyethylene oxide 25322-69-4, Polypropylene oxide 26221-73-8, Ethylene-octene copolymer 57619-91-7, Polytetraethylene glycol diacrylate 120246-23-3, Butylene-styrene block copolymer

RL: TEM (Technical or engineered material use); USES (Uses)
(multicomponent **composite** film and method for preparing the same)

IT 25568-84-7D, Cyclopentadiene homopolymer, hydrogenated

RL: TEM (Technical or engineered material use); USES (Uses)
(oligomeric; multicomponent **composite** film and method for preparing the same)

IT 9003-55-8

RL: TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber, hydrogenated, block, triblock; multicomponent **composite** film and method for preparing the same)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 15 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:935958 CAPLUS

DOCUMENT NUMBER: 136:56445

TITLE: Methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**

INVENTOR(S): Jang, Dong Hun; Kim, Sa Heum; Kim, Han Jun

PATENT ASSIGNEE(S): Finecell Co., Ltd., S. Korea

SOURCE: PCT Int. Appl., 45 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001099220	A1	<u>20011227</u>	WO 2000-KR482	20000524
W: CN, JP, KR, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 1290749	A1	<u>20030312</u>	EP 2000-927894	20000524
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				

IE, FI, CY

JP 2003536233

T2

20031202

JP 2002-503968

20000524

PRIORITY APPLN. INFO.:

WO 2000-KR482

W 20000524

AB The present invention is directed to an **electrolyte** film and/or a solid **electrolyte**, having a microporous structure, for a rechargeable cell. According to the present invention, when preparing the **electrolyte** film and/or the solid **electrolyte**, an inorg. absorbent is added in the amount of more than 70% by weight in a **polymer** matrix to prevent the porous structure from being destructed at the cell-assembling process such as lamination or pressing, whereby the absorbing power of a liquid **electrolyte** to the solid **electrolyte** film and the ionic conductivity can be maintained. The inorg. absorbent contained over the specific amount, together with the microporous structure, improves the capacity of absorbing the liquid **electrolyte** and, in particular, works as a structure element of increasing the mech. strength of **electrolyte** film and/or solid **electrolyte**. Therefore, the good ionic conductivity can be maintained even after the assembly of cell.

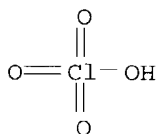
IT 7791-03-9, Lithium perchlorate

RL: DEV (Device component use); USES (Uses)

(methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 25014-41-9, Polyacrylonitrile

RL: MOA (Modifier or additive use); USES (Uses)

(methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**)

RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

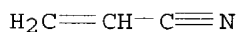
CMF C3 H3 N



IT 9003-18-3
RL: MOA (Modifier or additive use); USES (Uses)
(nitrile rubber, methods for preparation of microporous solid
electrolytes for rechargeable **batteries**)
RN 9003-18-3 CAPLUS
CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

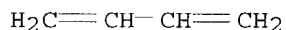
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 106-99-0
CMF C4 H6



IT 1344-28-1, Alumina, uses
RL: MOA (Modifier or additive use); USES (Uses)
(porous; methods for preparation of microporous solid **electrolytes**
for rechargeable **batteries**)
RN 1344-28-1 CAPLUS
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM H01M010-38
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **battery** microporous solid **electrolyte** prepn
IT Polyvinyl acetals
RL: MOA (Modifier or additive use); USES (Uses)
(formals; methods for preparation of microporous solid **electrolytes**
for rechargeable **batteries**)
IT Molecular sieves
(mesoporous; methods for preparation of microporous solid
electrolytes for rechargeable **batteries**)
IT **Battery electrolytes**
Ionic conductivity
Secondary **batteries**
(methods for preparation of microporous solid **electrolytes** for
rechargeable **batteries**)
IT Carbon black, uses
Clay minerals

EPDM rubber
 Fluoropolymers, uses
 Mica-group minerals, uses
 Nitrile rubber, uses
 Phyllosilicate minerals
 Polycarbonates, uses
 Polycarbosilanes
 Polyethers, uses
 Polyimides, uses

Polymers, uses
 Polyoxyalkylenes, uses
 Polysulfones, uses
 Polyurethanes, uses
 Zeolites (synthetic), uses

RL: MOA (Modifier or additive use); USES (Uses)

(methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 111-96-6, Diglyme 112-49-2, Triglyme 126-33-0, Sulfolane 143-24-8, Tetraglyme 505-22-6, 1,3-Dioxane 556-65-0, **Lithium** thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 4437-85-8, Butylene carbonate 7429-90-5, Aluminum, uses 7440-50-8, Copper, uses 7782-42-5, Graphite, uses 7791-03-9, **Lithium** perchlorate 12057-17-9, **Lithium** manganese oxide LiMn_2O_4 12190-79-3, Cobalt **lithium** oxide CoLiO_2 14283-07-9, **Lithium** tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate 29935-35-1, **Lithium** hexafluoroarsenate 33454-82-9, **Lithium** triflate 90076-65-6 132404-42-3

RL: DEV (Device component use); USES (Uses)

(methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**)

IT 67-63-0, Isopropanol, uses 79-41-4D, Methacrylic acid, esters, **polymers** 1309-48-4, Magnesium oxide, uses 1318-93-0, Montmorillonite, uses 9002-86-2, Polyvinyl chloride 9002-88-4, Polyethylene 9002-89-5, Polyvinyl alcohol 9002-93-1, Triton x 100 9003-07-0, Polypropylene 9003-27-4, Polyisobutylene 9003-29-6, Polybutylene 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 9012-09-3, Cellulose triacetate 12026-53-8, Paragonite 17831-71-9, Tetraethylene glycol diacrylate 24937-79-9, Polyvinylidene fluoride **25014-41-9**, Polyacrylonitrile 25322-68-3, Peo 31900-57-9, Polydimethylsiloxane 114481-92-4, Maleic anhydride-vinylidene fluoride copolymer

RL: MOA (Modifier or additive use); USES (Uses)

(methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**)

IT 56-81-5, Glycerol, uses 60-29-7, Ether, uses 64-17-5, Ethanol, uses 67-64-1, Acetone, uses 67-66-3, Chloroform, uses 67-68-5, DmsO, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses 75-09-2, Dichloromethane, uses 96-47-9, 2-Methyltetrahydrofuran 107-21-1, Ethylene glycol, uses 108-94-1, Cyclohexanone, uses 109-99-9, Thf,

uses 123-91-1, Dioxane, uses 127-19-5, Dimethylacetamide 141-78-6, Ethyl acetate, uses 680-31-9, Hexamethylphosphoramide, uses 872-50-4, n-Methylpyrrolidone, uses 7732-18-5, Water, uses 25917-35-5, Hexanol 30899-19-5, Pentanol 35296-72-1, Butanol

RL: TEM (Technical or engineered material use); USES (Uses)
(methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**)

IT 9003-18-3

RL: MOA (Modifier or additive use); USES (Uses)
(nitrile rubber, methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**)

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses

RL: MOA (Modifier or additive use); USES (Uses)
(porous; methods for preparation of microporous solid **electrolytes** for rechargeable **batteries**)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 16 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:868873 CAPLUS

DOCUMENT NUMBER: 136:9101

TITLE: Fabrication method for **lithium** secondary **battery** with **polymer electrolyte** prepared by spray method

INVENTOR(S): Yun, Kyung Suk; Cho, Byung Won; Cho, Won Il; Kim, Hyung Sun; Kim, Un Seok

PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S. Korea

SOURCE: PCT Int. Appl., 34 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001091222	A1	20011129	WO 2000-KR515	20000522
W: JP, KR, US				

PRIORITY APPLN. INFO.: WO 2000-KR515 20000522

AB The present invention provides a **lithium** secondary **battery** and its fabrication method. More particularly, the present invention provides a **lithium** secondary **battery** comprising a porous **polymer electrolyte** and its fabrication method, wherein the **polymer electrolyte** is fabricated by the following process: (a) dissolving at least one **polymer** with plasticizers and organic **electrolyte** solvents to obtain at least one **polymeric electrolyte** solution; (b) adding the obtained **polymeric electrolyte** solution to a barrel of a spray machine, and (c) spraying the **polymeric electrolyte** solution onto a substrate using a nozzle to form a porous **polymer electrolyte** film. The **lithium** secondary **battery** of the present invention has advantages of

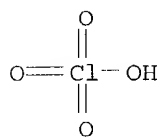
better adhesion with electrodes, good mech. strength, better performance at low and high temps., and better compatibility with organic electrolytes of a lithium secondary battery.

IT 7791-03-9, Lithium perchlorate 9010-76-8,
Acrylonitrile-vinylidene chloride copolymer 24968-79-4,
Acrylonitrile-methyl acrylate copolymer 25014-41-9,
Polyacrylonitrile

RL: DEV (Device component use); USES (Uses)
(fabrication method for lithium secondary battery
with polymer electrolyte prepared by spray method)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 9010-76-8 CAPLUS

CN 2-Propenenitrile, polymer with 1,1-dichloroethene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

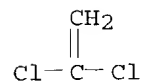
CMF C3 H3 N



CM 2

CRN 75-35-4

CMF C2 H2 Cl2



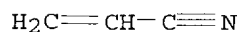
RN 24968-79-4 CAPLUS

CN 2-Propenoic acid, methyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

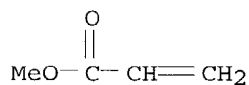
CMF C3 H3 N



CM 2

CRN 96-33-3

CMF C4 H6 O2



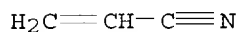
RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N



IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication method for **lithium** secondary
battery with **polymer electrolyte** prepared by
spray method)

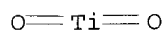
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 CAPLUS

CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **polymer electrolyte lithium secondary battery; spray method fabrication polymer electrolyte lithium secondary battery**

IT Inductance
(electrostatic, spray method; fabrication method for **lithium secondary battery** with **polymer electrolyte** prepared by spray method)

IT **Battery electrolytes**
Lamination
Plasticizers
Polymer electrolytes
(fabrication method for **lithium secondary battery** with **polymer electrolyte** prepared by spray method)

IT Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(fabrication method for **lithium secondary battery** with **polymer electrolyte** prepared by spray method)

IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication method for **lithium secondary battery** with **polymer electrolyte** prepared by spray method)

IT **Secondary batteries**
(**lithium**; fabrication method for **lithium secondary battery** with **polymer electrolyte** prepared by spray method)

IT Alcohols, uses
RL: MOA (Modifier or additive use); USES (Uses)
(plasticizer; fabrication method for **lithium secondary battery** with **polymer electrolyte** prepared by spray method)

IT Coating process
(spray; fabrication method for **lithium secondary battery** with **polymer electrolyte** prepared by spray method)

IT 79-20-9, Methyl acetate 105-37-3, Ethyl propionate 109-99-9, Thf, uses 141-78-6, Ethyl acetate, uses 554-12-1, Methyl propionate 7782-42-5, Graphite, uses **7791-03-9, Lithium perchlorate** 9002-86-2, Pvc 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-20-7, Polyvinyl acetate 9004-34-6, Cellulose, uses 9004-35-7, Cellulose acetate 9004-36-8 9004-39-1, Cellulose acetate propionate **9010-76-8, Acrylonitrile-vinylidene chloride copolymer** 9010-88-2, Ethyl acrylate-methylmethacrylate copolymer 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3, Cobalt **lithium oxide colio2** 14283-07-9, **Lithium tetrafluoroborate** 21324-40-3, **Lithium hexafluorophosphate** 24937-79-9, PvdF **24968-79-4, Acrylonitrile-methyl acrylate copolymer** 24980-34-5, Polyethylenesulfide **25014-41-9, Polyacrylonitrile** 25086-89-9, Vinyl acetate-vinyl pyrrolidone copolymer 25322-68-3, Peo 25322-69-4, Polypropylene oxide 25667-11-2, Polyethylenesuccinate 26913-06-4, Poly[imino(1,2-ethanediy)]

28726-47-8, Poly(oxyethylene-oxyethylene) 29935-35-1, **Lithium**
hexafluoroarsenate 33454-82-9, **Lithium** triflate 98973-15-0,
Poly[bis(2-(2-methoxyethoxyethoxy))-phosphazene]

RL: DEV (Device component use); USES (Uses)

(fabrication method for **lithium** secondary **battery**
with **polymer electrolyte** prepared by spray method)

IT 554-13-2, **Lithium** carbonate 1304-28-5, Barium oxide bao, uses
1309-48-4, Magnesia, uses 1310-65-2, **Lithium** hydroxide
1313-59-3, Sodium oxide, uses 1344-28-1, Alumina, uses
7631-86-9, Silica, uses 7789-24-4, **Lithium** fluoride, uses
9002-84-0, Ptfе 12003-67-7, Aluminum **lithium** oxide allio2
12047-27-7, Barium titanium oxide batio3, uses 12057-24-8, Lithia, uses
13463-67-7, Titania, uses 26134-62-3, **Lithium** nitride

RL: MOA (Modifier or additive use); USES (Uses)

(filling agent; fabrication method for **lithium** secondary
battery with **polymer electrolyte** prepared by
spray method)

IT 67-64-1, Acetone, uses 67-68-5, Dmsо, uses 68-12-2, Dmf, uses
80-73-9, 1,3-Dimethyl-2-imidazolidinone 96-48-0, Butyrolactone
96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7,
Propylene carbonate 110-71-4, 1,2-Dimethoxyethane 127-19-5,
n,n-Dimethyl acetamide 143-24-8, Tetraethylene glycol dimethyl ether
616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
872-50-4, n-Methyl-2-pyrrolidone, uses 4437-85-8, Butylene carbonate
26101-52-0

RL: MOA (Modifier or additive use); USES (Uses)

(plasticizer; fabrication method for **lithium** secondary
battery with **polymer electrolyte** prepared by
spray method)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 17 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:868872 CAPLUS

DOCUMENT NUMBER: 136:9100

TITLE: A **lithium** secondary **battery**
comprising **composite polymer**
electrolyte fabricated by a spray method

INVENTOR(S): Yun, Kyung Suk; Cho, Byung Won; Cho, Won Il; Kim,
Hyung Sun; Kim, Un Seok

PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S. Korea

SOURCE: PCT Int. Appl., 38 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001091221	A1	20011129	WO 2000-KR514	20000522
W: JP, KR, US				

PRIORITY APPLN. INFO.: WO 2000-KR514 20000522

AB The present invention provides a novel **composite polymer electrolyte, lithium secondary battery** comprising the **composite polymer electrolyte** and their fabrication methods. More particularly, the present invention provides the **composite polymer electrolyte** comprising a porous **polymer electrolyte** matrix with particles, fibers or mixture thereof having diams. of 1-3000 nm, **polymers** and **lithium salt-dissolved organic electrolyte** solns. incorporated into the porous **polymer** matrix. The **composite polymer electrolyte** of the present invention has advantages of better adhesion with electrodes, good mech. strength, better performance at low and high temps., better compatibility with organic **electrolytes** of **lithium secondary battery** and it can be applied to the manufacture of **lithium secondary batteries**.

IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (filling agent; **lithium secondary battery**
 comprising **composite polymer electrolyte**
 fabricated by spray method)

RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 CAPLUS

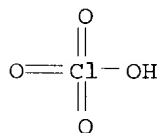
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)

O—Ti—O

IT 7791-03-9, **Lithium perchlorate** 9010-76-8,
 Acrylonitrile-vinylidene chloride copolymer 24968-79-4,
 Acrylonitrile-methylacrylate copolymer 25014-41-9,
 Polyacrylonitrile
 RL: DEV (Device component use); USES (Uses)
 (**lithium secondary battery** comprising
composite polymer electrolyte fabricated by
 spray method)

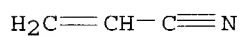
RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

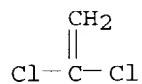


● Li

RN 9010-76-8 CAPLUS
CN 2-Propenenitrile, polymer with 1,1-dichloroethene (9CI) (CA INDEX NAME)
CM 1
CRN 107-13-1
CMF C3 H3 N



CM 2
CRN 75-35-4
CMF C2 H2 Cl2

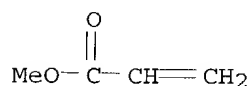


RN 24968-79-4 CAPLUS
CN 2-Propenoic acid, methyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)
CM 1
CRN 107-13-1
CMF C3 H3 N



CM 2
CRN 96-33-3

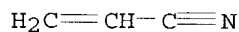
CMF C4 H6 O2



RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C3 H3 N



IC ICM H01M010-38
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **lithium secondary battery composite
polymer electrolyte; spray method fabrication
composite polymer electrolyte**
IT Inductance
(electrostatic induction spray; **lithium secondary
battery comprising composite polymer
electrolyte** fabricated by spray method)
IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; **lithium secondary battery
comprising composite polymer electrolyte**
fabricated by spray method)
IT **Battery electrolytes**
Plasticizers
Polymer electrolytes
(**lithium secondary battery** comprising
composite polymer electrolyte fabricated by
spray method)
IT Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(**lithium secondary battery** comprising
composite polymer electrolyte fabricated by
spray method)
IT **Secondary batteries**
(**lithium; lithium secondary battery**
comprising **composite polymer electrolyte**
fabricated by spray method)
IT Alcohols, uses

RL: MOA (Modifier or additive use); USES (Uses)
(plasticizer; **lithium secondary battery** comprising
composite polymer electrolyte fabricated by
spray method)

IT Coating process

(spray; **lithium secondary battery** comprising
composite polymer electrolyte fabricated by
spray method)

IT 554-13-2, **Lithium** carbonate 1304-28-5, Barium oxide bao, uses
1309-48-4, Magnesia, uses 1310-65-2, **Lithium** hydroxide
1313-59-3, Sodium oxide na2o, uses 1344-28-1, Alumina, uses
7631-86-9, Silica, uses 7789-24-4, **Lithium** fluoride, uses
9002-84-0, Ptfе 12003-67-7, Aluminum **lithium** oxide allio2
12047-27-7, Barium titanium oxide batio3, uses 12057-24-8, Lithia, uses
13463-67-7, Titania, uses 26134-62-3, **Lithium** nitride

RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; **lithium secondary battery**
comprising **composite polymer electrolyte**
fabricated by spray method)

IT 79-20-9, Methyl acetate 96-48-0, γ -Butyrolactone 96-49-1,
Ethylene carbonate 105-37-3, Ethyl propionate 105-58-8, Diethyl
carbonate 108-32-7, Propylene carbonate 109-99-9, Thf, uses
110-71-4, 1,2-Dimethoxyethane 127-19-5, Dimethyl acetamide 141-78-6,
Ethyl acetate, uses 554-12-1, Methyl propionate 616-38-6, Dimethyl
carbonate 623-53-0, Ethyl methyl carbonate 4437-85-8, Butylene
carbonate 7782-42-5, Graphite, uses 7791-03-9, **Lithium**
perchlorate 9002-86-2, Pvc 9002-88-4, Polyethylene 9003-07-0,
Polypropylene 9003-20-7, Polyvinyl acetate 9004-34-6, Cellulose, uses
9004-35-7, Cellulose acetate 9004-36-8 9004-39-1, Cellulose acetate
propionate 9010-76-8, Acrylonitrile-vinylidene chloride
copolymer 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer
9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidenefluoride
copolymer 12190-79-3, Cobalt **lithium** oxide colio2
14283-07-9, **Lithium** tetrafluoroborate 21324-40-3,
Lithium hexafluorophosphate 24937-79-9, Pvdф 24968-79-4
, Acrylonitrile-methylacrylate copolymer 24980-34-5, Polyethylene
sulfide 25014-41-9, Polyacrylonitrile 25086-89-9, Vinyl
acetate-vinylpyrrolidone copolymer 25322-68-3, Peo 25322-69-4,
Polypropylene oxide 25667-11-2, Polyethylenesuccinate 25721-76-0,
Polyethylene glycol dimethacrylate 26913-06-4, Poly[imino(1,2-
ethanediyl)] 28726-47-8, Poly(oxyethylene-oxyethylene) 29935-35-1,
Lithium hexafluoroarsenate 33454-82-9, **Lithium**
triflate 98973-15-0, Poly[bis(2-(2-methoxyethoxyethoxy))phosphazene]

RL: DEV (Device component use); USES (Uses)

(**lithium secondary battery** comprising
composite polymer electrolyte fabricated by
spray method)

IT 67-64-1, Acetone, uses 67-68-5, Dmsо, uses 68-12-2, Dmf, uses
80-73-9, 1,3-Dimethyl-2-imidazolidinone 143-24-8, Tetraethylene glycol
dimethyl ether 872-50-4, n-Methyl-2-pyrrolidone, uses 26101-52-0

RL: MOA (Modifier or additive use); USES (Uses)

(plasticizer; **lithium secondary battery** comprising

composite polymer electrolyte fabricated by
spray method)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 18 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:868871 CAPLUS
DOCUMENT NUMBER: 136:9099
TITLE: Fabrication of a **lithium** secondary
battery comprising a hybrid **polymer**
electrolyte prepared by a spray method
INVENTOR(S): Yun, Kyung Suk; Cho, Byung Won; Cho, Won Il; Kim,
Hyung Sun; Kim, Un Seok
PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S. Korea
SOURCE: PCT Int. Appl., 39 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001091220	A1	20011129	WO 2000-KR513	20000522

W: JP, KR, US

PRIORITY APPLN. INFO.: WO 2000-KR513 20000522

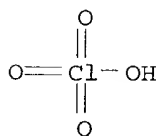
AB The present invention provides a novel hybrid **polymer**
electrolyte, a **lithium** secondary **battery**
comprising the hybrid **polymer electrolyte** and their
fabrication methods. More particularly, the present invention provides
the hybrid **polymer electrolyte** comprising a porous
polymer matrix with particles, fibers or mixture thereof having
diams. of 1-3000 nm, **polymers** and **lithium**
salt-dissolved organic **electrolyte** solns. incorporated into the
porous **polymer** matrix. The hybrid **polymer**
electrolyte has advantages of better adhesion with electrodes,
good mech. strength, better performance at low- and high-temps., better
compatibility with organic **electrolytes** of a **lithium**
secondary **battery** and it can be applied to the manufacture of
lithium secondary **batteries**.

IT 7791-03-9, **Lithium** perchlorate 9010-76-8,
Acrylonitrile-vinylidene chloride copolymer 24968-79-4,
Acrylonitrile-methylacrylate copolymer 25014-41-9,
Polyacrylonitrile

RL: DEV (Device component use); USES (Uses)
(fabrication of **lithium** secondary **battery**
comprising hybrid **polymer electrolyte** prepared by
spray method)

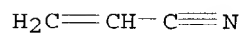
RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

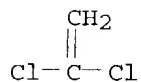


● Li

RN 9010-76-8 CAPLUS
 CN 2-Propenenitrile, polymer with 1,1-dichloroethene (9CI) (CA INDEX NAME)
 CM 1
 CRN 107-13-1
 CMF C3 H3 N



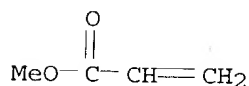
CM 2
 CRN 75-35-4
 CMF C2 H2 Cl2



RN 24968-79-4 CAPLUS
 CN 2-Propenoic acid, methyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)
 CM 1
 CRN 107-13-1
 CMF C3 H3 N



CM 2
 CRN 96-33-3
 CMF C4 H6 O2

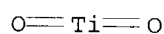


RN 25014-41-9 CAPLUS
 CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)
 CM 1
 CRN 107-13-1
 CMF C3 H3 N



IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (filling agent; fabrication of **lithium secondary battery** comprising hybrid **polymer electrolyte** prepared by spray method)
 RN 1344-28-1 CAPLUS
 CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 RN 13463-67-7 CAPLUS
 CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-38
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST **lithium secondary battery hybrid polymer electrolyte; spray method hybrid polymer electrolyte lithium secondary battery**
 IT Inductance
 (electrostatic, spray method; fabrication of **lithium secondary battery** comprising hybrid **polymer electrolyte** prepared by spray method)
 IT **Battery electrolytes**
 Plasticizers
Polymer electrolytes
 (fabrication of **lithium secondary battery** comprising hybrid **polymer electrolyte** prepared by spray method)
 IT Fluoropolymers, uses

- Polyoxyalkylenes, uses
 RL: DEV (Device component use); USES (Uses)
 (fabrication of **lithium** secondary **battery** comprising hybrid **polymer electrolyte** prepared by spray method)
- IT Fluoropolymers, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (filling agent; fabrication of **lithium** secondary **battery** comprising hybrid **polymer electrolyte** prepared by spray method)
- IT Secondary **batteries**
 (**lithium**; fabrication of **lithium** secondary **battery** comprising hybrid **polymer electrolyte** prepared by spray method)
- IT Alcohols, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (plasticizer; fabrication of **lithium** secondary **battery** comprising hybrid **polymer electrolyte** prepared by spray method)
- IT Coating process
 (spray; fabrication of **lithium** secondary **battery** comprising hybrid **polymer electrolyte** prepared by spray method)
- IT 79-20-9, Methyl acetate 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-37-3, Ethyl propionate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 127-19-5, Dimethyl acetamide 141-78-6, Ethyl acetate, uses 554-12-1, Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 4437-85-8, Butylene carbonate 7782-42-5, Graphite, uses 7791-03-9, **Lithium** perchlorate 9002-86-2, Pvc 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-20-7, Polyvinyl acetate 9004-34-6, Cellulose, uses 9004-35-7, Cellulose acetate 9004-36-8 9004-39-1, Cellulose acetate propionate 9010-76-8, Acrylonitrile-vinylidene chloride copolymer 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3, Cobalt **lithium** oxide colio2 14283-07-9, **Lithium** tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate 24936-67-2, Polyethylene sulfide 24937-79-9, Polyvinylidene fluoride 24968-79-4, Acrylonitrile-methylacrylate copolymer 25014-41-9, Polyacrylonitrile 25086-89-9, Vinyl acetate-vinylpyrrolidone copolymer 25322-68-3, Peo 25322-69-4, Polypropylene oxide 25667-11-2, Polyethylene succinate 26570-48-9, Polyethylene glycol diacrylate 26913-06-4, Poly[imino(1,2-ethanediyl)] 28726-47-8, Poly(oxyethyleneoxyethylene) 29935-35-1, **Lithium** hexafluoroarsenate 33454-82-9, **Lithium** triflate 98973-15-0, Poly[bis(2-(2-methoxyethoxyethoxy))phosphazene]
 RL: DEV (Device component use); USES (Uses)
 (fabrication of **lithium** secondary **battery** comprising hybrid **polymer electrolyte** prepared by spray method)

IT 68-12-2, Dmf, uses 872-50-4, n-Methyl-2-pyrrolidone, uses 26101-52-0
 RL: MOA (Modifier or additive use); USES (Uses)
 (fabrication of **lithium** secondary **battery**
 comprising hybrid **polymer electrolyte** prepared by
 spray method)

IT 554-13-2, **Lithium** carbonate 1304-28-5, Barium oxide bao, uses
 1309-48-4, Magnesia, uses 1310-65-2, **Lithium** hydroxide
 1313-59-3, Sodium oxide na2o, uses 1344-28-1, Alumina, uses
 7631-86-9, Silica, uses 7789-24-4, **Lithium** fluoride, uses
 9002-84-0, Ptfe 12003-67-7, Aluminum **lithium** oxide allio2
 12047-27-7, Barium titanium oxide batio3, uses 12057-24-8, Lithia, uses
 13463-67-7, Titania, uses 26134-62-3, **Lithium** nitride
 RL: MOA (Modifier or additive use); USES (Uses)
 (filling agent; fabrication of **lithium** secondary
battery comprising hybrid **polymer electrolyte**
 prepared by spray method)

IT 67-64-1, Acetone, uses 67-68-5, Dms0, uses 80-73-9,
 1,3-Dimethyl-2-imidazolidinone 143-24-8, Tetraethylene glycol dimethyl
 ether
 RL: MOA (Modifier or additive use); USES (Uses)
 (plasticizer; fabrication of **lithium** secondary
battery comprising hybrid **polymer electrolyte**
 prepared by spray method)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 19 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2001:868870 CAPLUS
 DOCUMENT NUMBER: 136:9098
 TITLE: A **lithium** secondary **battery**
 comprising a porous **polymer** separator film
 fabricated by a spray method

INVENTOR(S): Yun, Kyung Suk; Cho, Byung Won; Cho, Won Il; Kim,
 Hyung Sun; Kim, Un Seok

PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S. Korea

SOURCE: PCT Int. Appl., 36 pp.
 CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001091219	A1	20011129	WO 2000-KR512	20000522
W: JP, KR, US				
PRIORITY APPLN. INFO.:			WO 2000-KR512	20000522
AB The present invention provides a lithium secondary battery and its fabrication method. More particularly, the present invention provides a lithium secondary battery comprising a porous polymer separator film and its fabrication method, wherein the porous polymer separator film is fabricated				

by the following process : (a) melting at least one **polymer** or dissolving at least one **polymer** with an organic solvent to obtain at least one **polymeric** melt or at least one **polymeric** solution; (b) adding the obtained **polymeric** melt or **polymeric** solution to barrels of a spray machine; and (c) spraying the **polymeric** melt or **polymeric** solution onto a substrate using a nozzle to form a porous separator film. The **lithium** secondary **battery** of the present invention has advantages of better adhesion with electrodes, good mech. strength, better performance at low and high temps., and better compatibility with an organic **electrolyte** solution of a **lithium** secondary **battery**

IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (filling agent; **lithium** secondary **battery**
 comprising porous **polymer** separator film fabricated by spray
 method)

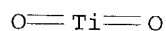
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 CAPLUS

CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)

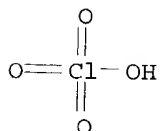


IT 7791-03-9, **Lithium** perchlorate 9010-76-8,
 Acrylonitrile-vinylidene chloride copolymer 24968-79-4,
 Acrylonitrile-methylacrylate copolymer 25014-41-9,
 Polyacrylonitrile

RL: DEV (Device component use); USES (Uses)
 (**lithium** secondary **battery** comprising porous
polymer separator film fabricated by spray method)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

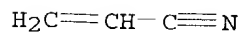
RN 9010-76-8 CAPLUS

CN 2-Propenenitrile, polymer with 1,1-dichloroethene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

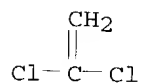
CMF C3 H3 N



CM 2

CRN 75-35-4

CMF C2 H2 C12



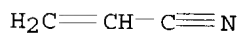
RN 24968-79-4 CAPLUS

CN 2-Propenoic acid, methyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

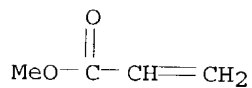
CMF C3 H3 N



CM 2

CRN 96-33-3

CMF C4 H6 O2



RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N



- IC ICM H01M010-38
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
- ST **lithium secondary battery porous polymer**
separator
- IT Inductance
(electrostatic induction; **lithium secondary battery**
comprising porous **polymer** separator film fabricated by spray
method)
- IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; **lithium secondary battery**
comprising porous **polymer** separator film fabricated by spray
method)
- IT Secondary **battery** separators
(**lithium secondary battery** comprising porous
polymer separator film fabricated by spray method)
- IT Alcohols, uses
Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(**lithium secondary battery** comprising porous
polymer separator film fabricated by spray method)
- IT Secondary **batteries**
(**lithium; lithium secondary battery**
comprising porous **polymer** separator film fabricated by spray
method)
- IT Coating process
(spray; **lithium secondary battery** comprising porous
polymer separator film fabricated by spray method)
- IT 554-13-2, **Lithium** carbonate 1304-28-5, Baria, uses
1309-48-4, Magnesia, uses 1310-65-2, **Lithium** hydroxide
1313-59-3, Sodium oxide na2o, uses 1344-28-1, Alumina, uses
7631-86-9, Silica, uses 7789-24-4, **Lithium** fluoride, uses
9002-84-0, Ptfе 12003-67-7, Aluminum **lithium** oxide allio2
12047-27-7, Barium titanium oxide batio3, uses 12057-24-8, Lithia, uses
13463-67-7, Titania, uses 26134-62-3, **Lithium** nitride
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; **lithium secondary battery**
comprising porous **polymer** separator film fabricated by spray
method)
- IT 67-64-1, Acetone, uses 67-68-5, Dmsо, uses 68-12-2, Dmf, uses
79-20-9, Methyl acetate 80-73-9, 1,3-Dimethyl-2-imidazolidinone
96-48-0, Butyrolactone 96-49-1, Ethylene carbonate 105-37-3, Ethyl
propionate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 127-19-5,

n,n-Dimethylacetamide 141-78-6, Ethyl acetate, uses 143-24-8,
 Tetraethylene glycol dimethyl ether 554-12-1, Methyl propionate
 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
 872-50-4, n-Methyl-2-pyrrolidone, uses 4437-85-8, Butylene carbonate
 7782-42-5, Graphite, uses **7791-03-9, Lithium**
 perchlorate 9002-86-2, Pvc 9002-88-4, Polyethylene 9003-07-0,
 Polypropylene 9003-20-7, Polyvinyl acetate 9004-34-6, Cellulose, uses
 9004-35-7, Cellulose acetate 9004-36-8 9004-39-1, Cellulose acetate
 propionate **9010-76-8**, Acrylonitrile-vinylidene chloride
 copolymer 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer
 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride
 copolymer 12190-79-3, Cobalt **lithium** oxide colio2
 14283-07-9, **Lithium** tetrafluoroborate 21324-40-3,
Lithium hexafluorophosphate 24937-79-9, PvdF **24968-79-4**
 , Acrylonitrile-methylacrylate copolymer 24980-34-5, Polyethylene
 sulfide **25014-41-9**, Polyacrylonitrile 25086-89-9, Vinyl
 acetate-vinylpyrrolidone copolymer 25322-68-3, Peo 25322-69-4,
 Polypropylene oxide 25667-11-2, Polyethylene succinate 26101-52-0
 26913-06-4, Poly[imino(1,2-ethanediy)] 28726-47-8,
 Poly(Oxymethyleneoxyethylene) 29935-35-1, **Lithium**
 hexafluoroarsenate 33454-82-9, **Lithium** triflate 98973-15-0,
 Poly[bis(2-(2-methoxyethoxyethoxy))phosphazene]
 RL: DEV (Device component use); USES (Uses)

(**lithium** secondary **battery** comprising porous
polymer separator film fabricated by spray method)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

Handwritten: Data

L23 ANSWER 20 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2001:865066 CAPLUS
 DOCUMENT NUMBER: 136:8988
 TITLE: Gel **electrolytic** precursor and manufacturing
 of non-aqueous secondary **battery**
 INVENTOR(S): Hibino, Seiji; Kano, Koji; Iwahisa, Masahiro
 PATENT ASSIGNEE(S): Toshiba Battery Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001332303	A2	<u>20011130</u>	JP 2000-150171	20000522
PRIORITY APPLN. INFO.:			JP 2000-150171	20000522

AB The title **battery** consists of a pos. electrode, a neg.
 electrode, and a gel **electrolytic** layer disposed between the
 pos. and neg. electrodes. The porous gel **electrolytic** precursor
 contains a 1st **polymer** which is barely disol. in a non-aqueous
electrolytic solution and a 2nd **polymer** of gel-formable in
 a non-aqueous **electrolytic** solution The volume ratio of the 2nd

polymer to the 1st polymer is in the range of 0.1-5.

The expansion rate of the 1st polymer is $\leq 30\%$.

IT 1344-28-1, Alumina, uses 7791-03-9, Lithium
perchlorate 24980-62-9, Acrylonitrile vinyl acetate copolymer
25014-41-9, Polyacrylonitrile 25053-12-7, Acrylonitrile
ethylacrylate copolymer

RL: DEV (Device component use); USES (Uses)

(gel electrolytic precursor and manufacturing of non-aqueous secondary
battery)

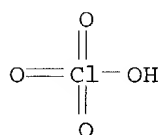
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

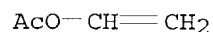
RN 24980-62-9 CAPLUS

CN Acetic acid ethenyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX
NAME)

CM 1

CRN 108-05-4

CMF C4 H6 O2



CM 2

CRN 107-13-1

CMF C3 H3 N



RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N



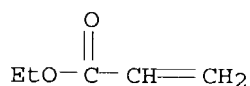
RN 25053-12-7 CAPLUS

CN 2-Propenoic acid, ethyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 140-88-5

CMF C5 H8 O2



CM 2

CRN 107-13-1

CMF C3 H3 N



IC ICM H01M010-40

ICS C08K003-16; C08K003-24; C08K003-32; C08K003-38; C08K005-42;
C08L023-08; C08L025-12; C08L027-16; C08L027-20; C08L033-20;
C08L055-02; C08L071-02

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72

ST gel **electrolytic** precursor nonaq secondary **battery**

IT Secondary **batteries**

(gel **electrolytic** precursor and manufacturing of non-aqueous secondary **battery**)

IT Carbon black, uses

Carbon fibers, uses

Fluoropolymers, uses

Phenolic resins, uses

Polymers, uses

Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)

(gel **electrolytic** precursor and manufacturing of non-aqueous secondary **battery**)

IT 68-12-2, Dmf, uses 872-50-4, N-Methyl-2-pyrrolidone, uses 1313-13-9, Manganese dioxide, uses 1314-62-1, Vanadium oxide, uses 1317-33-5, Molybdenum disulfide, uses **1344-28-1**, Alumina, uses 7440-02-0, Nickel, uses 7440-50-8, Copper, uses 7782-42-5, Graphite, uses **7791-03-9**, Lithium perchlorate 9004-34-6, Cellulose, uses 9011-17-0 12031-65-1, **Lithium** nickel oxide (LiNiO₂) 12039-13-3, Titanium disulfide 12057-17-9, **Lithium** manganese oxide (LiMn₂O₄) 12190-79-3, **Lithium** cobalt oxide (LiCoO₂) 14283-07-9 21324-40-3 24937-78-8, Ethylene vinyl acetate copolymer 24937-79-9, Polyvinylidene fluoride **24980-62-9**, Acrylonitrile vinyl acetate copolymer **25014-41-9**, Polyacrylonitrile **25053-12-7**, Acrylonitrile ethylacrylate copolymer 25322-68-3, Polyethylene oxide 25322-69-4, Polypropylene oxide 29935-35-1 33454-82-9

RL: DEV (Device component use); USES (Uses)

(gel **electrolytic** precursor and manufacturing of non-aqueous secondary **battery**)

IT 78-93-3, Methyl ethyl ketone, uses 108-88-3, Toluene, uses 109-99-9, Tetrahydrofuran, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(gel **electrolytic** precursor and manufacturing of non-aqueous secondary **battery**)

L23 ANSWER 21 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:865065 CAPLUS

DOCUMENT NUMBER: 136:8987

TITLE: Gel **electrolytic** precursor and manufacturing of non-aqueous secondary **battery**

INVENTOR(S): Hibino, Seiji; Iwahisa, Masahiro; Kano, Koji

PATENT ASSIGNEE(S): Toshiba Battery Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001332302	A2	20011130	JP 2000-150170	20000522
PRIORITY APPLN. INFO.:			JP 2000-150170	20000522

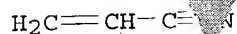
AB The title **battery** consists of a pos. electrode, a neg. electrode, and a gel **electrolytic** layer disposed between the pos. and neg. electrodes. The porous gel **electrolytic** precursor contains a 1st **polymer** which is barely disol. in a non-aqueous **electrolytic** solution and a 2nd **polymer** of gel-formable in a non-aqueous **electrolytic** solution. The precursor is soaked with a non-aqueous **electrolytic** solution, followed by heating and cooling to form the gel **electrolyte**. The volume ratio of the 2nd **polymer** to the 1st **polymer** is in the range of 0.1-5.

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 10 1

CMF C3 N



IT 1344-28-1, Alumina, uses and miscellaneous

RL: USES (Uses)

(γ -, electrolytes containing, lithium

perchlorate-polyacrylonitrile, for secondary batteries)

RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM H01M010-26

ICS H01M010-40; H01M006-18

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST battery polyacrylonitrile alkali salt electrolyte

IT Batteries, secondary

(magnesium/manganese dioxide-molybdenum and lithium/titanium
disulfide-molybdenum, with lithium perchlorate-
polyacrylonitrile electrolytes)

IT 7791-03-9, Lithium perchlorate

RL: USES (Uses)

(electrolytes containing polyacrylonitrile and, for secondary
batteries)

IT 7439-93-2D, Lithium, complexes with polyacrylonitrile

25014-41-9D, Polyacrylonitrile, lithium complexes

RL: USES (Uses)

(electrolytes, for secondary batteries)

IT 1344-28-1, Alumina, uses and miscellaneous

RL: USES (Uses)

(γ -, electrolytes containing, lithium

perchlorate-polyacrylonitrile, for secondary batteries)

=>

Lithium aluminate

RL: MOA (Modifier or additive use); USES (Uses)
 (fillers; acrylonitrile-Me methacrylate copolymer and **lithium**
 salt aprotic solvent solution as solid **electrolyte** for secondary
batteries)

L23 ANSWER 35 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1990:462636 CAPLUS

DOCUMENT NUMBER: 113:62636

TITLE: Secondary **batteries** with solid
polymer electrolytes

INVENTOR(S): Jiang, Zhe; Yu, Mengqi; Zhu, Wencun; Tian, Qingyuan

PATENT ASSIGNEE(S): Tianjin Normal Training School, Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 10 pp.
 CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1030671	A	19890125	CN 1987-104786	19870711
PRIORITY APPLN. INFO.:			CN 1987-104786	19870711

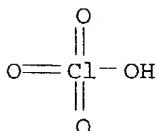
AB A thin polyacrylonitrile-alkali metal salt complex film is used as
electrolyte for **batteries**. Preferably, the mixing mol
 ratio of polyacrylonitrile:salt is (2-6):1 and the salt is selected from
 NaI, NaSCN, LiI, LiClO₄, and CF₃SO₃Li. The **batteries** have a
 light metal (Li or its alloy, Al, Mg, and Zn) anode and a cathode of a
 metal ion-insertable material such as TiS₂, MnO₂, V₆O₁₃, Mo, and/or C.

IT 7791-03-9, **Lithium** perchlorate

RL: USES (Uses)
 (**electrolytes** containing polyacrylonitrile and, for secondary
batteries)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



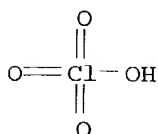
● Li

IT 25014-41-9D, Polyacrylonitrile, **lithium** complexes

RL: USES (Uses)
 (**electrolytes**, for secondary **batteries**)

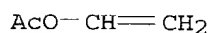
RN 25014-41-9 CAPLUS

IT 1344-28-1, Alumina, uses 7791-03-9, Lithium perchlorate 24980-62-9, Acrylonitrile vinyl acetate copolymer 25014-41-9, Polyacrylonitrile 25053-12-7, Acrylonitrile ethylacrylate copolymer
 RL: DEV (Device component use); USES (Uses)
 (gel electrolytic precursor and manufacturing of non-aqueous secondary battery)
 RN 1344-28-1 CAPLUS
 CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
 *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 RN 7791-03-9 CAPLUS
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 24980-62-9 CAPLUS
 CN Acetic acid ethenyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)
 CM 1
 CRN 108-05-4
 CMF C4 H6 O2



CM 2
 CRN 107-13-1
 CMF C3 H3 N



RN 25014-41-9 CAPLUS
 CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)
 CM 1

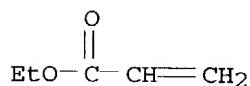
CRN 107-13-1
CMF C3 H3 N



RN 25053-12-7 CAPLUS
CN 2-Propenoic acid, ethyl ester, polymer with 2-propenenitrile (9CI) (CA
INDEX NAME)

CM 1

CRN 140-88-5
CMF C5 H8 O2



CM 2

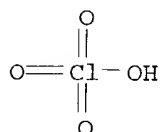
CRN 107-13-1
CMF C3 H3 N



IC ICM H01M010-40
ICS C08J009-28; C08L101-00
CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
ST gel **electrolytic** precursor nonaq secondary **battery**
IT Secondary **batteries**
(gel **electrolytic** precursor and manufacturing of non-aqueous secondary
battery)
IT Carbon black, uses
Carbon fibers, uses
Fluoropolymers, uses
Phenolic resins, uses
Polymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(gel **electrolytic** precursor and manufacturing of non-aqueous secondary
battery)
IT 68-12-2, Dmf, uses 872-50-4, N-Methyl-2-pyrrolidone, uses 1313-13-9,
Manganese dioxide, uses 1314-62-1, Vanadium oxide, uses 1317-33-5,

solution to a barrel of an electrospinning machine; and, (c) electropinning the **polymeric electrolyte** solution onto a substrate using a nozzle to form a **polymer electrolyte** film. The **lithium secondary battery** of the present invention has advantages of better adhesion with electrodes, good mech. strength, better performance at low and high temps., and better compatibility with organic **electrolytes** of a **lithium secondary battery**.

IT 7791-03-9, **Lithium perchlorate** 9010-76-8,
 Acrylonitrile-vinylidene chloride copolymer 24968-79-4,
 Acrylonitrile-methylacrylate copolymer 25014-41-9,
 Polyacrylonitrile
 RL: DEV (Device component use); USES (Uses)
 (fabrication of **lithium secondary battery**
 comprising superfine fibrous **polymer electrolyte**)
 RN 7791-03-9 CAPLUS
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

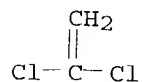


● Li

RN 9010-76-8 CAPLUS
 CN 2-Propenenitrile, polymer with 1,1-dichloroethene (9CI) (CA INDEX NAME)
 CM 1
 CRN 107-13-1
 CMF C3 H3 N



CM 2
 CRN 75-35-4
 CMF C2 H2 Cl2

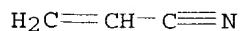


RN 24968-79-4 CAPLUS
CN 2-Propenoic acid, methyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

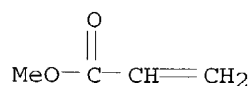
CMF C3 H3 N



CM 2

CRN 96-33-3

CMF C4 H6 O2

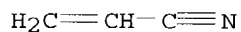


RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

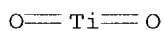
CMF C3 H3 N



IT 13463-67-7, Titania, uses
RL: DEV (Device component use); USES (Uses)
(filling agent; fabrication of **lithium** secondary
battery comprising superfine fibrous **polymer**
electrolyte)

RN 13463-67-7 CAPLUS

CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



IT 1344-28-1, Alumina, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication of **lithium** secondary

battery comprising superfine fibrous polymer electrolyte)

RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **lithium secondary battery** superfine fibrous
polymer electrolyte

IT **Battery electrolytes**
Plasticizers

Polymer electrolytes

(fabrication of **lithium secondary battery**
comprising superfine fibrous **polymer electrolyte**)

IT Fluoropolymers, uses
Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)
(fabrication of **lithium secondary battery**
comprising superfine fibrous **polymer electrolyte**)

IT Fluoropolymers, uses

RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication of **lithium secondary battery** comprising superfine fibrous **polymer electrolyte**)

IT Secondary batteries

(**lithium**; fabrication of **lithium secondary battery** comprising superfine fibrous **polymer electrolyte**)

IT Alcohols, uses

RL: MOA (Modifier or additive use); USES (Uses)
(plasticizer; fabrication of **lithium secondary battery** comprising superfine fibrous **polymer electrolyte**)

IT Fibers

RL: DEV (Device component use); USES (Uses)
(spinning, electrospinning; fabrication of **lithium secondary battery** comprising superfine fibrous **polymer electrolyte**)

IT 79-20-9, Methyl acetate 105-37-3, Ethyl propionate 109-99-9, Thf, uses
141-78-6, Ethyl acetate, uses 554-12-1, Methyl propionate
7791-03-9, **Lithium perchlorate** 9002-86-2, Pvc
9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-20-7, Polyvinyl
acetate 9004-34-6, Cellulose, uses 9004-35-7, Cellulose acetate
9004-36-8 9004-39-1, Cellulose acetate propionate 9010-76-8,
Acrylonitrile-vinylidene chloride copolymer 9010-88-2, Ethyl
acrylate-methyl methacrylate copolymer 9011-14-7, Pmma 9011-17-0,
Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3, Cobalt
lithium oxide colio2 14283-07-9, **Lithium**
tetrafluoroborate 21324-40-3, **Lithium hexafluorophosphate**
24936-67-2, Polyethylenesulfide 24937-79-9, PvdF 24968-79-4,

Acrylonitrile-methylacrylate copolymer 25014-41-9,
Polyacrylonitrile 25086-89-9, Vinyl acetate-vinylpyrrolidone copolymer
25266-14-2, Oxyethylene-oxyethylene copolymer 25322-68-3, Peo
25322-69-4, Polypropylene oxide 25569-53-3, Polyethylenesuccinate
26913-06-4, Poly[imino(1,2-ethanediyl)] 29935-35-1, **Lithium**
hexafluoroarsenate 33454-82-9, **Lithium** triflate 98973-15-0,
Poly[bis(2-(2-methoxyethoxyethoxy)phosphazene)]
RL: DEV (Device component use); USES (Uses)

(fabrication of **lithium** secondary **battery**
comprising superfine fibrous **polymer electrolyte**)

IT 7631-86-9, Silica, uses 26101-52-0

RL: MOA (Modifier or additive use); USES (Uses)

(fabrication of **lithium** secondary **battery**
comprising superfine fibrous **polymer electrolyte**)

IT 13463-67-7, Titania, uses

RL: DEV (Device component use); USES (Uses)

(filling agent; fabrication of **lithium** secondary
battery comprising superfine fibrous **polymer**
electrolyte)

IT 554-13-2, **Lithium** carbonate 1304-28-5, Barium oxide bao, uses

1309-48-4, Magnesia, uses 1310-65-2, **Lithium** hydroxide

1313-59-3, Sodium oxide, uses 1344-28-1, Alumina, uses

7789-24-4, **Lithium** fluoride, uses 9002-84-0, Ptfе

12003-67-7, Aluminum **lithium** oxide allio2 12047-27-7, Barium

titanium oxide batio3, uses 12057-24-8, Lithia, uses 26134-62-3,

Lithium nitride

RL: MOA (Modifier or additive use); USES (Uses)

(filling agent; fabrication of **lithium** secondary
battery comprising superfine fibrous **polymer**
electrolyte)

IT 67-64-1, Acetone, uses 67-68-5, Dmsо, uses 68-12-2, Dmf, uses

80-73-9, 1,3-Dimethyl-2-imidazolidinone 96-48-0, Butyrolactone

96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7,

Propylene carbonate 110-71-4, 1,2-Dimethoxyethane 127-19-5,

n,n-Dimethyl acetamide 143-24-8, Tetraethylene glycol dimethyl ether

616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate

872-50-4, N-Methyl-2-pyrrolidone, uses 4437-85-8, Butylene carbonate

RL: MOA (Modifier or additive use); USES (Uses)

(plasticizer; fabrication of **lithium** secondary
battery comprising superfine fibrous **polymer**
electrolyte)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 23 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:851556 CAPLUS

DOCUMENT NUMBER: 135:374195

TITLE: Fabrication of a **lithium** secondary
battery comprising a superfine fibrous
polymer separator film

INVENTOR(S): Yun, Kyung Suk; Cho, Byung Won; Jo, Seong Mu; Lee, Wha
Seop; Cho, Won Il; Park, Kun You; Kim, Hyung Sun; Kim,

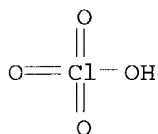
PATENT ASSIGNEE(S): Un Seok; Ko, Seok Ku; Chun, Suk Won; Choi, Sung Won
 SOURCE: Korea Institute of Science and Technology, S. Korea
 PCT Int. Appl., 34 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001089022	A1	20011122	WO 2000-KR500	20000519
W: JP, KR, US				
JP 2003533862	T2	20031111	JP 2001-585344	20000519
PRIORITY APPLN. INFO.:			WO 2000-KR500	W 20000519

AB The present invention provides a **lithium** secondary **battery** and its fabrication method. More particularly, the present invention provides a **lithium** secondary **battery** comprising a super fine fibrous porous **polymer** separator film and its fabrication method, wherein the porous **polymer** separator film is fabricated by the following process: (a) melting at least one **polymer** or dissolving at least one **polymer** with organic solvents to obtain at least one **polymeric** melt or at least one **polymeric** solution; (b) adding the obtained **polymeric** melt or **polymeric** solution to barrels of an electrospinning machine; and (c) discharging the **polymeric** melt or **polymeric** solution onto a substrate using a nozzle to form a porous separator film. The **lithium** secondary **battery** of the present invention has the advantages of better adhesion with electrodes, good mech. strength, better performance at low and high temps., and better compatibility with organic **electrolyte** solution of a **lithium** secondary **battery**.

IT 7791-03-9, **Lithium** perchlorate 9010-76-8, Acrylonitrile-vinylidene chloride copolymer 25014-41-9, Polyacrylonitrile 25749-57-9, Acrylonitrile-methacrylic acid copolymer
 RL: DEV (Device component use); USES (Uses)
 (fabrication of **lithium** secondary **battery** comprising superfine fibrous **polymer** separator film)

RN 7791-03-9 CAPLUS
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 9010-76-8 CAPLUS
CN 2-Propenenitrile, polymer with 1,1-dichloroethene (9CI) (CA INDEX NAME)

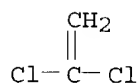
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 75-35-4
CMF C2 H2 Cl2



RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C3 H3 N



RN 25749-57-9 CAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

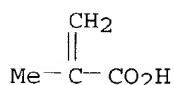
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

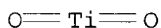
CRN 79-41-4
CMF C4 H6 O2



IT 1344-28-1, Alumina, uses
RL: MOA (Modifier or additive use); USES (Uses)
(fabrication of **lithium** secondary **battery**
comprising superfine fibrous **polymer** separator film)
RN 1344-28-1 CAPLUS
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 13463-67-7, Titania, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication of **lithium** secondary
battery comprising superfine fibrous **polymer**
separator film)
RN 13463-67-7 CAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **lithium** secondary **battery** superfine fibrous
polymer separator
IT Secondary **battery** separators
(fabrication of **lithium** secondary **battery**
comprising superfine fibrous **polymer** separator film)
IT Alcohols, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(fabrication of **lithium** secondary **battery**
comprising superfine fibrous **polymer** separator film)
IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(fabrication of **lithium** secondary **battery**
comprising superfine fibrous **polymer** separator film)
IT Secondary **batteries**
(**lithium**; fabrication of **lithium** secondary
battery comprising superfine fibrous **polymer**
separator film)
IT Fibers

RL: DEV (Device component use); USES (Uses)
 (spinning, electro-; fabrication of **lithium** secondary
battery comprising superfine fibrous **polymer**
 separator film)

IT 67-64-1, Acetone, uses 67-68-5, DmsO, uses 68-12-2, Dmf, uses
 79-20-9, Methyl acetate 80-73-9, 1,3-Dimethyl-2-imidazolidinone
 96-48-0, Butyrolactone 96-49-1, Ethylene carbonate 105-37-3, Ethyl
 propionate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 127-19-5, Dimethyl
 acetamide 141-78-6, Ethyl acetate, uses 143-24-8, Tetraethyleneglycol
 dimethyl ether 554-12-1, Methyl propionate 616-38-6, Dimethyl
 carbonate 623-53-0, Ethylmethyl carbonate 872-50-4,
 n-Methyl-2-pyrrolidone, uses 4437-85-8, Butylene carbonate 7782-42-5,
 Graphite, uses 7791-03-9, **Lithium** perchlorate
 9002-86-2, Pvc 9002-88-4, Polyethylene 9003-07-0, Polypropylene
 9003-20-7, Polyvinyl acetate 9004-34-6, Cellulose, uses 9004-35-7,
 Cellulose acetate 9004-36-8 9004-39-1, Cellulose acetate propionate
9010-76-8, Acrylonitrile-vinylidene chloride copolymer
 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer 9011-14-7, Pmma
 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3,
 Cobalt **lithium** oxide colio2 14283-07-9, **Lithium**
 tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate
 24936-67-2, Polyethylenesulfide 24937-79-9, PvdF **25014-41-9**,
 Polyacrylonitrile 25086-89-9, Vinyl acetate-vinyl pyrrolidone copolymer
 25266-14-2 25322-68-3, Peo 25322-69-4, Polypropylene oxide
 25569-53-3, Polyethylenesuccinate **25749-57-9**,
 Acrylonitrile-methacrylic acid copolymer 26101-52-0 26913-06-4,
 Poly[imino(1,2-ethanediyl)] 29935-35-1, **Lithium**
 hexafluoroarsenate 33454-82-9, **Lithium** triflate 98973-15-0

RL: DEV (Device component use); USES (Uses)
 (fabrication of **lithium** secondary **battery**
 comprising superfine fibrous **polymer** separator film)

IT 554-13-2, **Lithium** carbonate 1344-28-1, Alumina, uses
 9002-84-0, PtfE

RL: MOA (Modifier or additive use); USES (Uses)
 (fabrication of **lithium** secondary **battery**
 comprising superfine fibrous **polymer** separator film)

IT 1304-28-5, Barium monoxide, uses 1309-48-4, Magnesia, uses 1310-65-2,
Lithium hydroxide 1313-59-3, Sodium oxide na2O, uses
 7631-86-9, Silica, uses 7789-24-4, **Lithium** fluoride, uses
 12003-67-7, Aluminum **lithium** oxide allio2 12047-27-7, Barium
 titanium oxide batio3, uses 12057-24-8, Lithia, uses 13463-67-7
 , Titania, uses 26134-62-3, **Lithium** nitride

RL: MOA (Modifier or additive use); USES (Uses)
 (filling agent; fabrication of **lithium** secondary
battery comprising superfine fibrous **polymer**
 separator film)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 24 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2001:851555 CAPLUS

DOCUMENT NUMBER: 135:374194
 TITLE: Fabrication of **composite polymer electrolyte** and a **lithium secondary battery** comprising the **composite polymer electrolyte**
 INVENTOR(S): Yun, Kyung Suk; Cho, Byung Won; Jo, Seong Mu; Lee, Wha Seop; Cho, Won Il; Park, Kun You; Kim, Hyung Sun; Kim, Un Seok; Ko, Seok Ku; Choi, Sung Won
 PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S. Korea; Chun, Suk Won
 SOURCE: PCT Int. Appl., 37 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001089021	A1	20011122	WO 2000-KR499	20000519
W: JP, KR, US				

PRIORITY APPLN. INFO.: WO 2000-KR499 20000519

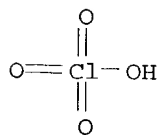
AB The present invention provides a novel **composite polymer electrolyte, lithium secondary battery** comprising the **composite polymer electrolyte** and their fabrication methods. More particularly, the present invention provides the **composite polymer electrolyte** comprising super fine fibrous porous **polymer electrolyte** matrix with particles having diameter of 1-3000 nm, **polymers** and **lithium** salt-dissolved organic **electrolyte** solns. incorporated into the porous **polymer electrolyte** matrix. The **composite polymer electrolyte** of the present invention has advantages of better adhesion with electrodes, good mech. strength, better performance at low and high temps., better compatibility with organic **electrolytes** of **lithium** secondary **battery** and it can be applied to the manufacture of **lithium** secondary **batteries**.

IT 7791-03-9, **Lithium perchlorate 9010-76-8**, Acrylonitrile-vinylidene chloride copolymer 25014-41-9, Polyacrylonitrile 25749-57-9, Acrylonitrile-methacrylic acid copolymer

RL: DEV (Device component use); USES (Uses)
 (fabrication of **composite polymer electrolyte** and **lithium secondary battery** comprising **composite polymer electrolyte**)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

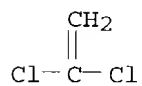


● Li

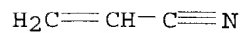
RN 9010-76-8 CAPLUS
 CN 2-Propenenitrile, polymer with 1,1-dichloroethene (9CI) (CA INDEX NAME)
 CM 1
 CRN 107-13-1
 CMF C3 H3 N



CM 2
 CRN 75-35-4
 CMF C2 H2 Cl2

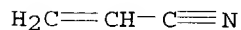


RN 25014-41-9 CAPLUS
 CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)
 CM 1
 CRN 107-13-1
 CMF C3 H3 N



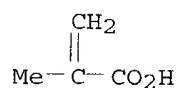
RN 25749-57-9 CAPLUS
 CN 2-Propenoic acid, 2-methyl-, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)
 CM 1

CRN 107-13-1
CMF C3 H3 N



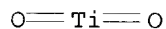
CM 2

CRN 79-41-4
CMF C4 H6 O2



IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication of **composite polymer
electrolyte and lithium secondary battery
comprising composite polymer electrolyte**)
RN 1344-28-1 CAPLUS
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 13463-67-7 CAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **lithium secondary battery composite
polymer electrolyte**
IT **Battery electrolytes**
Plasticizers
Polymer electrolytes
(fabrication of **composite polymer
electrolyte and lithium secondary battery
comprising composite polymer electrolyte**)
IT Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(fabrication of **composite polymer
electrolyte and lithium secondary battery**)

- comprising **composite polymer electrolyte**)
- IT Fluoropolymers, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (filling agent; fabrication of **composite polymer electrolyte** and **lithium secondary battery** comprising **composite polymer electrolyte**)
- IT Secondary batteries
 (lithium; fabrication of **composite polymer electrolyte** and **lithium secondary battery** comprising **composite polymer electrolyte**)
- IT Alcohols, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (plasticizer; fabrication of **composite polymer electrolyte** and **lithium secondary battery** comprising **composite polymer electrolyte**)
- IT Fibers
 RL: DEV (Device component use); USES (Uses)
 (spinning, electro-; fabrication of **composite polymer electrolyte** and **lithium secondary battery** comprising **composite polymer electrolyte**)
- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 7782-42-5, Graphite, uses 7791-03-9, **Lithium** perchlorate 9002-86-2, Pvc 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-20-7, Polyvinyl acetate 9004-34-6, Cellulose, uses 9004-35-7, Cellulose acetate 9004-36-8 9004-39-1, Cellulose acetate propionate 9010-76-8, Acrylonitrile-vinylidene chloride copolymer 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3, Cobalt **lithium** oxide colio2 14283-07-9, **Lithium** tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate 24936-67-2, Polyethylene sulfide 24937-79-9, PvdF 25014-41-9, Polyacrylonitrile 25086-89-9, Vinyl acetate-vinylpyrrolidone copolymer 25266-14-2 25322-68-3, Peo 25322-69-4, Polypropylene oxide 25569-53-3, Polyethylene succinate 25721-76-0, Polyethylene glycol dimethacrylate 25749-57-9, Acrylonitrile-methacrylic acid copolymer 26570-48-9, Polyethylene glycol diacrylate 26913-06-4, Poly[imino(1,2-ethanediyl)] 29935-35-1, **Lithium** hexafluoroarsenate 33454-82-9, **Lithium** triflate 98973-15-0
 RL: DEV (Device component use); USES (Uses)
 (fabrication of **composite polymer electrolyte** and **lithium secondary battery** comprising **composite polymer electrolyte**)
- IT 79-20-9, Methyl acetate 96-48-0, γ -Butyrolactone 105-37-3, Ethyl propionate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 127-19-5, Dimethyl acetamide 141-78-6, Ethyl acetate, uses 554-12-1, Methyl propionate 4437-85-8, Butylene carbonate 12003-67-7, Aluminum **lithium** oxide allio2
 RL: MOA (Modifier or additive use); USES (Uses)
 (fabrication of **composite polymer electrolyte** and **lithium secondary battery**)

comprising **composite polymer electrolyte**)

IT 554-13-2, **Lithium** carbonate 1304-28-5, Baria, uses
 1309-48-4, Magnesia, uses 1310-65-2, **Lithium** hydroxide
 1313-59-3, Sodium oxide, uses 1344-28-1, Alumina, uses
 7631-86-9, Silica, uses 7789-24-4, **Lithium** fluoride, uses
 9002-84-0, Ptfе 12047-27-7, Barium titanium oxide batіo3, uses
 12057-24-8, Lithia, uses 13463-67-7, Titania, uses 26134-62-3,
Lithium nitride li3n

RL: MOA (Modifier or additive use); USES (Uses)
 (filling agent; fabrication of **composite polymer
 electrolyte and lithium secondary battery
 comprising composite polymer electrolyte**)

IT 67-64-1, Acetone, uses 67-68-5, Dmsо, uses 68-12-2, Dmf, uses
 80-73-9, 1,3-Dimethyl-2-imidazolidinone 143-24-8, Tetraethylene glycol
 dimethyl ether 872-50-4, n-Methyl-2-pyrrolidone, uses 26101-52-0

RL: MOA (Modifier or additive use); USES (Uses)
 (plasticizer; fabrication of **composite polymer
 electrolyte and lithium secondary battery
 comprising composite polymer electrolyte**)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 25 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:851554 CAPLUS

DOCUMENT NUMBER: 135:374193

TITLE: Fabrication method of **lithium secondary
 battery with hybrid polymer
 electrolyte**

INVENTOR(S): Yun, Kyung Suk; Cho, Byung Won; Jo, Seong Mu; Lee, Wha
 Seop; Cho, Won Il; Park, Kun You; Kim, Hyung Sun; Kim,
 Un Seok; Ko, Seok Ku; Chun, Suk Won; Choi, Sung Won

PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S. Korea

SOURCE: PCT Int. Appl., 41 pp.
 CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001089020	A1	20011122	WO 2000-KR498	20000519
W: JP, KR, US				
JP 2003533861	T2	20031111	JP 2001-585342	20000519
PRIORITY APPLN. INFO.:			WO 2000-KR498	W 20000519

AB The present invention provides a novel hybrid **polymer
 electrolyte, a lithium secondary battery
 comprising the hybrid polymer electrolyte
 polymer** and their fabrication methods. More particularly, the
 present invention provides the hybrid **polymer
 electrolyte** comprising superfine fibrous porous **polymer**
 matrix with particles having diameter of 1-3000 nm, **polymers** and

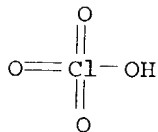
lithium salt-dissolved organic **electrolyte** solns. incorporated into the porous **polymer** matrix. The hybrid **polymer electrolyte** has advantages of better adhesion with electrodes, good mech. strength, better performance at low and high temps., better compatibility with organic **electrolytes** of a **lithium** secondary **battery** and it can be applied to the manufacture of **lithium** secondary **batteries**.

IT 7791-03-9, **Lithium** perchlorate 9010-76-8,
Acrylonitrile-vinylidene chloride copolymer 25014-41-9,
Polyacrylonitrile 25749-57-9, Acrylonitrile-methacrylic acid
copolymer

RL: DEV (Device component use); USES (Uses)
(fabrication method of **lithium** secondary **battery**
with hybrid **polymer electrolyte**)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 9010-76-8 CAPLUS

CN 2-Propenenitrile, polymer with 1,1-dichloroethene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

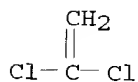
CMF C3 H3 N



CM 2

CRN 75-35-4

CMF C2 H2 Cl2



RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N



RN 25749-57-9 CAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

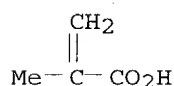
CMF C3 H3 N



CM 2

CRN 79-41-4

CMF C4 H6 O2



IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filling agent; fabrication method of lithium secondary
battery with hybrid polymer electrolyte)

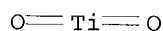
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 CAPLUS

CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST **lithium secondary battery hybrid polymer electrolyte**
 IT **Battery electrolytes**
 Plasticizers
Polymer electrolytes
 (fabrication method of **lithium secondary battery with hybrid polymer electrolyte**)
 IT Fluoropolymers, uses
 Polyoxyalkylenes, uses
 RL: DEV (Device component use); USES (Uses)
 (fabrication method of **lithium secondary battery with hybrid polymer electrolyte**)
 IT Fluoropolymers, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (filling agent; fabrication method of **lithium secondary battery with hybrid polymer electrolyte**)
 IT Secondary **batteries**
 (**lithium**; fabrication method of **lithium secondary battery with hybrid polymer electrolyte**)
 IT Alcohols, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (plasticizer; fabrication method of **lithium secondary battery with hybrid polymer electrolyte**)
 IT Fibers
 RL: DEV (Device component use); USES (Uses)
 (spinning, electro-; fabrication method of **lithium secondary battery with hybrid polymer electrolyte**)
 IT 79-20-9, Methyl acetate 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 127-19-5, Dimethyl acetamide 141-78-6, Ethyl acetate, uses 554-12-1, Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0, Ethylmethyl carbonate 4437-85-8, Butylene carbonate 7782-42-5, Graphite, uses 7791-03-9, **Lithium perchlorate** 9002-86-2, Pvc 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-20-7, Polyvinyl acetate 9004-34-6, Cellulose, uses 9004-35-7, Cellulose acetate 9004-36-8 9004-39-1, Cellulose acetate propionate **9010-76-8**, Acrylonitrile-vinylidene chloride copolymer 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3, Cobalt **lithium oxide colio2** 14283-07-9, **Lithium tetrafluoroborate** 21324-40-3, **Lithium hexafluorophosphate** 24937-79-9, PvdF 24980-34-5, Polyethylene sulfide **25014-41-9**, Polyacrylonitrile 25086-89-9 25266-14-2, Oxyethylene-oxyethylene copolymer 25322-68-3, Peo 25322-69-4, Polypropylene oxide 25569-53-3, Polyethylene succinate 25721-76-0, Polyethylene glycol dimethacrylate **25749-57-9**, Acrylonitrile-methacrylic acid copolymer 26570-48-9, Polyethylene glycol diacrylate 26913-06-4, Poly[imino(1,2-ethanediyl)] 29935-35-1, **Lithium**

hexafluoroarsenate 33454-82-9, **Lithium** triflate 98973-15-0

RL: DEV (Device component use); USES (Uses)

(fabrication method of **lithium** secondary **battery**
with hybrid **polymer electrolyte**)

IT 554-13-2, **Lithium** carbonate 1304-28-5, Baria, uses
1309-48-4, Magnesia, uses 1310-65-2, **Lithium** hydroxide
1313-59-3, Sodiumoxide, uses **1344-28-1**, Alumina, uses
7631-86-9, Silica, uses 7789-24-4, **Lithium** fluoride, uses
9002-84-0, Ptfе 12003-67-7, Aluminum **lithium** oxide allio2
12047-27-7, Barium titanium oxide batio3, uses 12057-24-8, Lithia, uses
13463-67-7, Titania, uses 26134-62-3, **Lithium** nitride
li3n

RL: MOA (Modifier or additive use); USES (Uses)

(filling agent; fabrication method of **lithium** secondary
battery with hybrid **polymer electrolyte**)

IT 67-64-1, Acetone, uses 67-68-5, Dmsо, uses 68-12-2, Dmf, uses
80-73-9, 1,3-Dimethyl-2-imidazolidinone 143-24-8, Tetraethylene glycol
dimethyl ether 872-50-4, n-Methyl-2-pyrrolidone, uses 26101-52-0

RL: MOA (Modifier or additive use); USES (Uses)

(plasticizer; fabrication method of **lithium** secondary
battery with hybrid **polymer electrolyte**)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 26 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:598427 CAPLUS

DOCUMENT NUMBER: 135:183257

TITLE: Method of producing ion conductive laminate for
electrolyte application in
electrochemical cells

INVENTOR(S): Takeuchi, Masataka; Naijo, Shuichi; Ohkubo, Takashi;
Yotsuyanagi, Junji; Hirata, Motoyuki

PATENT ASSIGNEE(S): Japan

SOURCE: U.S. Pat. Appl. Publ., 46 pp., Cont.-in-part of U.S.
Ser. No. 822,465, abandoned.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2001014420	A1	20010816	US 1997-946850	19971008
US 6306509	B2	20011023		
WO 9735351	A1	19970925	WO 1997-JP944	19970321

W: CA, CN, KR, SG, US

RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

PRIORITY APPLN. INFO.: JP 1996-93682 A 19960321
US 1996-14567P P 19960401
US 1997-822465 B2 19970321
WO 1997-JP944 A2 19970321

AB A laminate comprises an ion conductive material having excellent ion conductivity
 at room temperature or at lower temps., a small water content, sufficiently high
 mech. strength and storage stability to allow for handling the ion conductive material in practice, and a form which is easily integrated into an **electrochem.** element or **electrochem.** devices.
 Also disclosed is a production method thereof, and a method of producing a **battery**, a capacitor or an **electrochem.** element or apparatus using the laminate. The laminate comprises an intermediate layer of an ion conductive material having on the upper and lower portions thereof outer layers having an ion conductivity lower than that of the intermediate layer. Furthermore, at least one of the outer layers is a layer comprising a non-electron-conductive material.

IT 25749-57-9DP, Acrylonitrile-methacrylic acid copolymer, **lithium** complexes
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (method of producing ion conductive laminate for **electrolyte** application in **electrochem.** cells)

RN 25749-57-9 CAPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

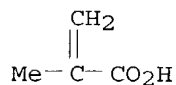
CMF C3 H3 N



CM 2

CRN 79-41-4

CMF C4 H6 O2



IT 1344-28-1, Alumina, uses 7791-03-9, **Lithium** perchlorate
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (method of producing ion conductive laminate for **electrolyte** application in **electrochem.** cells)

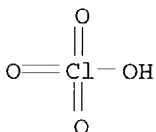
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC B32B003-00; H01M010-26

NCL 429209000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72, 74, 76

ST **battery electrolyte** ion conductive laminate

IT Capacitors

(double layer; method of producing ion conductive laminate for
electrolyte application in **electrochem.** cells)

IT Electroluminescent devices

(**electrochem.**; method of producing ion conductive laminate
for **electrolyte** application in **electrochem.** cells)

IT Capacitors

(**electrolyte**; method of producing ion conductive laminate for
electrolyte application in **electrochem.** cells)

IT Secondary **batteries**

(**lithium**; method of producing ion conductive laminate for
electrolyte application in **electrochem.** cells)

IT **Battery electrolytes**

Electric resistance

Electrochromic devices

Electrochromic imaging devices

Ionic conductivity

Laminated materials

Photoelectrochemical cells

Photoelectrodes

(method of producing ion conductive laminate for **electrolyte**
application in **electrochem.** cells)

IT Alkali metal salts

Phosphonium compounds

Quaternary ammonium compounds, uses

RL: DEV (Device component use); USES (Uses)

(method of producing ion conductive laminate for **electrolyte**
application in **electrochem.** cells)

IT Polyanilines

RL: DEV (Device component use); SPN (Synthetic preparation); PREP

- (Preparation); USES (Uses)
 (method of producing ion conductive laminate for **electrolyte** application in **electrochem.** cells)
- IT Polyesters, uses
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (method of producing ion conductive laminate for **electrolyte** application in **electrochem.** cells)
- IT Polyoxyalkylenes, uses
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (method of producing ion conductive laminate for **electrolyte** application in **electrochem.** cells)
- IT Plastics, uses
 RL: DEV (Device component use); USES (Uses)
 (thermoplastics; method of producing ion conductive laminate for **electrolyte** application in **electrochem.** cells)
- IT Plastics, uses
 RL: DEV (Device component use); USES (Uses)
 (thermosetting; method of producing ion conductive laminate for **electrolyte** application in **electrochem.** cells)
- IT 7440-44-0, Activated carbon, uses
 RL: DEV (Device component use); USES (Uses)
 (activated; method of producing ion conductive laminate for **electrolyte** application in **electrochem.** cells)
- IT 7429-90-5, Aluminum, uses 7782-42-5, Graphite, uses 9003-07-0, Polypropylene
 RL: DEV (Device component use); USES (Uses)
 (method of producing ion conductive laminate for **electrolyte** application in **electrochem.** cells)
- IT 1314-35-8P, Tungsten trioxide, uses 12190-79-3P, cobalt lithium oxide colio2 21324-40-3P, **Lithium** hexafluorophosphate 25233-30-1P, Polyaniline 25721-76-0DP, Polyethylene glycol dimethacrylate, **lithium** complexes 25749-57-9DP, Acrylonitrile-methacrylic acid copolymer, **lithium** complexes 106769-84-0P, Cadmium selenide telluride 118889-33-1DP, alkali metal complexes 355005-92-4DP, **lithium** complexes
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (method of producing ion conductive laminate for **electrolyte** application in **electrochem.** cells)
- IT 429-06-1, Tetraethylammoniumtetrafluoroborate 1344-28-1, Alumina, uses 2926-30-9, Sodium triflate 7791-03-9, **Lithium** perchlorate 12597-68-1, stainless steel, uses 14283-07-9, **Lithium** tetrafluoroborate 25038-59-9, Polyethylene terephthalate, uses 25322-68-3, Polyethylene glycol
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (method of producing ion conductive laminate for **electrolyte** application in **electrochem.** cells)
- IT 7439-93-2DP, **Lithium**, polymer complexes, uses 7440-23-5DP, Sodium, polymer complexes, uses 196618-28-7DP,

alkali metal complexes 355010-46-7DP, alkali metal complexes
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material
 use); PREP (Preparation); USES (Uses)
 (method of producing ion conductive laminate for **electrolyte**
 application in **electrochem.** cells)

L23 ANSWER 27 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2001:451291 CAPLUS
 DOCUMENT NUMBER: 135:63758
 TITLE: **Polymer electrolyte** elements,
 manufacture of the elements and rolls of the elements,
 the **polymer electrolyte** element
 rolls, and manufacture of **batteries**
 INVENTOR(S): Amanokura, Hitoshi; Sonobe, Hiroyuki; Uehara, Hideaki;
 Saito, Masayasu
 PATENT ASSIGNEE(S): Hitachi Chemical Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:



PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001167638	A2	20010622	JP 1999-348915	19991208
PRIORITY APPLN. INFO.:			JP 1999-348915	19991208

AB The **electrolyte** elements have a dried reaction layer of a
 reactive resin on a support, and are prepared by applying the resin on the
 support and drying when necessary. Preferably, the reactive resin
 contains a resin having weight average mol. weight 1000-3,000,000, a ethylenic
 unsatd. photopolymerizable component, and a photopolymn. initiator. The
polymer electrolyte element rolls are prepared by rolling
 the elements. The **batteries** are prepared by laminating the
polymer electrolyte element, with **battery**
 electrodes with the reaction layer in compact with the cathode or anode.

IT **1344-28-1**, Alumina, uses
 RL: DEV (Device component use); USES (Uses)
 (compns. and manufacture of **polymer electrolyte**
 components for secondary **lithium batteries**)

RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **345663-84-5P 345663-87-8P**
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP
 (Preparation); USES (Uses)
 (compns. and manufacture of **polymer electrolyte**
 components for secondary **lithium batteries**)

RN 345663-84-5 CAPLUS

CN 2-Propenoic acid, 2-methyl-, (1-methylethylidene)bis(4,1-phenyleneoxy-2,1-
 ethanediyl) ester, polymer with ethyl 2-propenoate, α -hydro- ω -

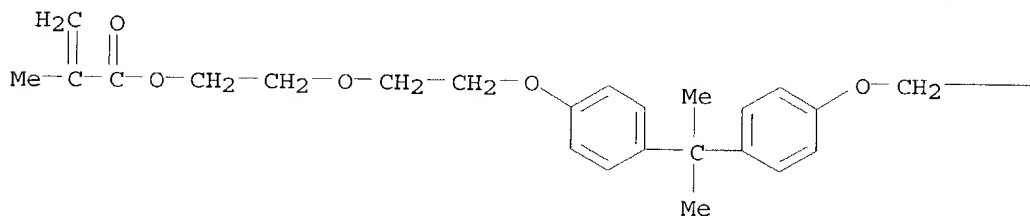
[(1-oxo-2-propenyl)oxy]poly(oxy-1,2-ethanediyl) ether with
2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1), (1-
methylethylidene)bis(4,1-phenyleneoxy-2,1-ethanediyl)oxy-2,1-ethanediyl)
bis(2-methyl-2-propenoate), methyl 2-methyl-2-propenoate and
2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

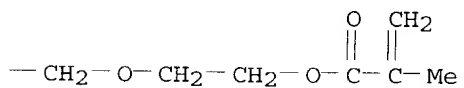
CRN 56744-60-6

CMF C31 H40 O8

PAGE 1-A



PAGE 1-B



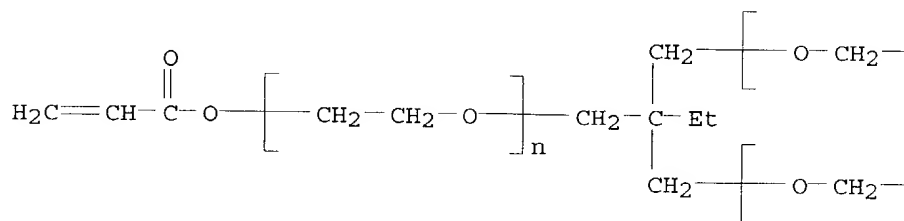
CM 2

CRN 28961-43-5

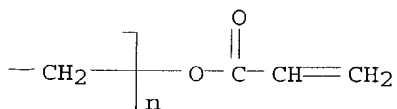
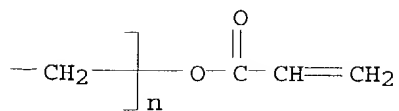
CMF (C2 H4 O)_n (C2 H4 O)_n (C2 H4 O)_n C15 H20 O6

CCI PMS

PAGE 1-A



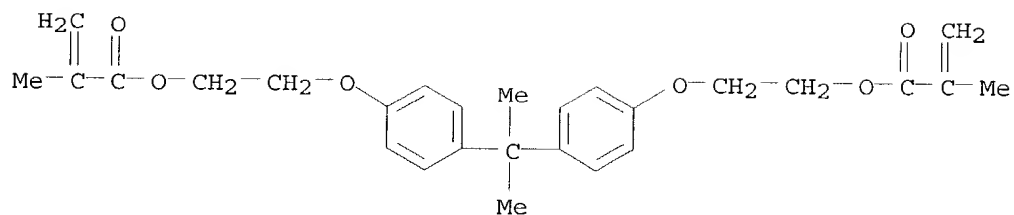
PAGE 1-B



CM 3

CRN 24448-20-2

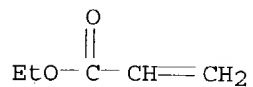
CMF C27 H32 O6



CM 4

CRN 140-88-5

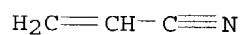
CMF C5 H8 O2



CM 5

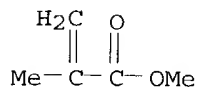
CRN 107-13-1

CMF C3 H3 N



CM 6

CRN 80-62-6
CMF C5 H8 O2

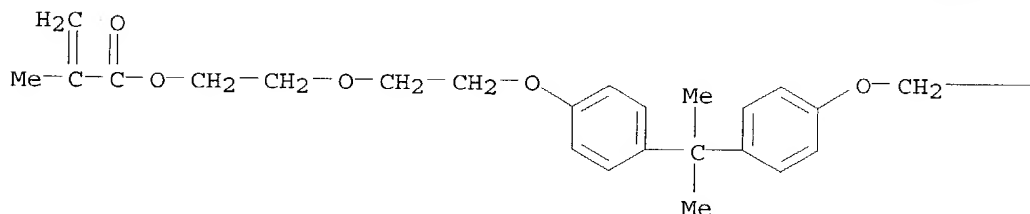


RN 345663-87-8 CAPLUS
CN 2-Propenoic acid, 2-methyl-, (1-methylethylidene)bis(4,1-phenyleneoxy-2,1-ethanediyl) ester, polymer with ethyl 2-propenoate, α -hydro- ω -[(1-oxo-2-propenyl)oxy]poly(oxy-1,2-ethanediyl) ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1), methyl 2-methyl-2-propenoate and 2-propenenitrile (9CI) (CA INDEX NAME)

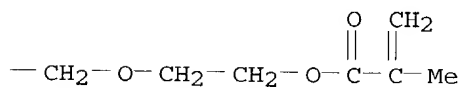
CM 1

CRN 56744-60-6
CMF C31 H40 O8

PAGE 1-A



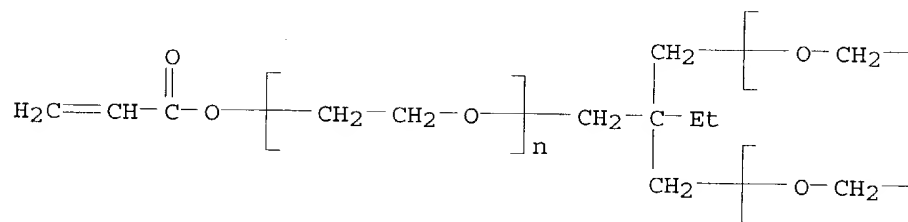
PAGE 1-B



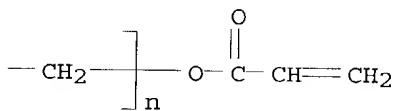
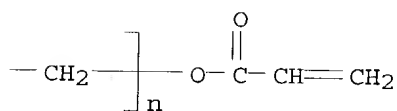
CM 2

CRN 28961-43-5
CMF (C2 H4 O)_n (C2 H4 O)_n (C2 H4 O)_n C15 H20 O6
CCI PMS

PAGE 1-A



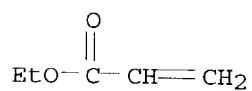
PAGE 1-B



CM 3

CRN 140-88-5

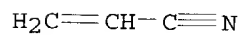
CMF C5 H8 O2



CM 4

CRN 107-13-1

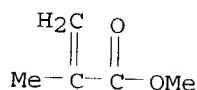
CMF C3 H3 N



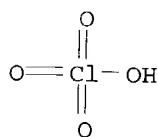
CM 5

CRN 80-62-6

CMF C5 H8 O2



IT 7791-03-9, **Lithium perchlorate**
 RL: DEV (Device component use); USES (Uses)
 (supports for **polymer electrolyte** components for
 secondary **lithium batteries**)
 RN 7791-03-9 CAPLUS
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC ICM H01B005-14
 ICS C08J007-04; H01M010-40; C09D201-00; H01B001-06
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST **battery polymer electrolyte** element manuf
 IT **Battery electrolytes**
 (compns. and manufacture of **polymer electrolyte**
 components for secondary **lithium batteries**)
 IT Polyesters, uses
 RL: DEV (Device component use); USES (Uses)
 (supports for **polymer electrolyte** components for
 secondary **lithium batteries**)
 IT 84-66-2, Dep 84-74-2, Dbp 1344-28-1, Alumina, uses
 7631-86-9, aerosil 50, uses
 RL: DEV (Device component use); USES (Uses)
 (compns. and manufacture of **polymer electrolyte**
 components for secondary **lithium batteries**)
 IT 345663-84-5P 345663-85-6P 345663-86-7P 345663-87-8P
 345663-88-9P
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP
 (Preparation); USES (Uses)
 (compns. and manufacture of **polymer electrolyte**
 components for secondary **lithium batteries**)
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
 7791-03-9, **Lithium perchlorate** 14283-07-9,
Lithium fluoroborate 21324-40-3, **Lithium**
hexafluorophosphate 25038-59-9, Poly(ethylene terephthalate), uses
 RL: DEV (Device component use); USES (Uses)
 (supports for **polymer electrolyte** components for

secondary lithium batteries)

L23 ANSWER 28 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2001:319645 CAPLUS
 DOCUMENT NUMBER: 134:313659
 TITLE: **Polymer electrolyte membrane for use in lithium batteries**
 INVENTOR(S): Heider, Udo; Oesten, Rudiger; Scrosati, Bruno; Croce, Fausto
 PATENT ASSIGNEE(S): Merck Patent G.m.b.H., Germany
 SOURCE: Eur. Pat. Appl., 6 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1096591	A1	20010502	EP 2000-122498	20001014
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
TW 477083	B	<u>20020221</u>	TW 2000-89122360	20001024
JP 2001155770	A2	<u>20010608</u>	JP 2000-326338	20001026
CN 1303135	A	<u>20010711</u>	CN 2000-131956	20001026
PRIORITY APPLN. INFO.:			EP 1999-121289	A 19991026
			DE 1999-19951872	A 19991028

AB The invention relates to gel-like membranes comprising ceramic materials and intended for **electrochem.** cells. The **polymer** is selected from the group consisting of polyacrylonitrile, PMMA, polyvinyl chloride, polyvinyl sulfone, polyethylene glycol diacrylate, polyvinyl pyrrolidone, and/or polyvinylidene fluoride, and the ceramic is selected from Al oxide, Si oxide, Ti oxide, and/or Zr oxide.

IT **1344-28-1**, Aluminum oxide, uses **7791-03-9**, **Lithium perchlorate 13463-67-7**, Titania, uses **25014-41-9**, Polyacrylonitrile
 RL: DEV (Device component use); USES (Uses)
 (**polymer electrolyte membrane for use in lithium batteries**)

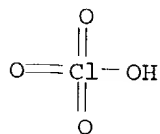
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

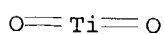
RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 13463-67-7 CAPLUS
CN Titanium oxide (TiO₂) (8CI, 9CI) (CA INDEX NAME)



RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C3 H3 N



IC ICM H01M010-40
ICS B01D071-68; B01D071-38; B01D071-34; B01D071-42; H01M004-62;
H01M002-16; H01G009-02; C08J005-22
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **lithium battery polymer based gel membrane**
IT **Secondary batteries**
(**lithium; polymer electrolyte membrane**
for use in **lithium batteries**)
IT **Battery electrolytes**
Ceramics
(**polymer electrolyte membrane for use in**
lithium batteries)
IT Fluoropolymers, uses
Polymers, uses
RL: DEV (Device component use); USES (Uses)
(**polymer electrolyte membrane for use in**
lithium batteries)
IT Vinyl compounds, uses
RL: DEV (Device component use); USES (Uses)
(**sulfones, polymers; polymer electrolyte**
membrane for use in **lithium batteries**)

IT Sulfones

RL: DEV (Device component use); USES (Uses)
(vinyl, **polymers; polymer electrolyte**
membrane for use in **lithium batteries**)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 1314-23-4,
Zirconia, uses 1344-28-1, Aluminum oxide, uses 7631-86-9,
Silica, uses 7791-03-9, **Lithium** perchlorate
9002-86-2, Polyvinyl chloride 9003-39-8, Polyvinyl pyrrolidone
9011-14-7, Pmma 13463-67-7, Titania, uses 21324-40-3,
Lithium hexafluorophosphate 24937-79-9, Polyvinylidene fluoride
25014-41-9, Polyacrylonitrile 26570-48-9, Polyethylene glycol
diacrylate 132404-42-3

RL: DEV (Device component use); USES (Uses)
(**polymer electrolyte** membrane for use in
lithium batteries)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 29 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:168300 CAPLUS

DOCUMENT NUMBER: 134:210511

TITLE: All-solid-state **electrochemical** device and
method of manufacturing

INVENTOR(S): Munshi, M. Zafar A.

PATENT ASSIGNEE(S): Lithium Power Technologies, Inc., USA

SOURCE: PCT Int. Appl., 51 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001017052	A2	20010308	WO 2000-US22917	20000821
WO 2001017052	A3	20020221		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,
LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,
SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU,
ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,
CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

US 6664006 B1 20031216 US 1999-388733 19990902

TW 521450 B 20030221 TW 2000-89116078 20000810

JP 2003508887 T2 20030304 JP 2001-520497 20000821

PRIORITY APPLN. INFO.: US 1999-388733 A 19990902

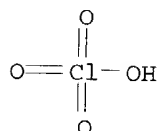
WO 2000-US22917 W 20000821

AB All-solid-state **electrochem.** cells and **batteries**
employing very thin film, highly conductive **polymeric**

electrolyte and very thin electrode structures are disclosed, along with economical and high-speed methods of manufacturing. A preferred embodiment is a rechargeable **lithium polymer electrolyte battery**. New **polymeric electrolytes** employed in the devices are strong yet flexible, dry and non-tacky. The new, thinner electrode structures have strength and flexibility characteristics very much like thin film capacitor dielec. material that can be tightly wound in the making of a capacitor. A wide range of **polymers**, or **polymer** blends, characterized by high ionic conductivity at room temperature, and below, are used as the **polymer** base material for making the solid **polymer electrolytes**. The preferred **polymeric electrolyte** is a cationic conductor. In addition to the **polymer** base material, the **polymer electrolyte compns.** exhibit a conductivity greater than 1×10^{-4} S/cm at 25° or below and contain an elec. conductive **polymer**, a metal salt, a finely divided ionic conductor, and a finely divided inorg. filler material. Certain rechargeable **batteries** of the invention provide high specific energy (250 to 350 Wh/kg) (gravimetric) and energy d. (450 to 550 Wh/L) (volumetric), high cycle life (1000 cycles), low self-discharge and improved safety.

IT 1344-28-1, Alumina, uses 7791-03-9, **Lithium perchlorate** 25014-41-9, Polyacrylonitrile
 RL: DEV (Device component use); USES (Uses)
 (all-solid-state **electrochem.** device and method of manufacturing)
 RN 1344-28-1 CAPLUS
 CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 RN 7791-03-9 CAPLUS
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 25014-41-9 CAPLUS
 CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
 CMF C3 H3 N



- IC ICM H01M010-40
- ICS H01G009-02; H01B001-12
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
- ST **lithium polymer electrolyte battery**
; safety **lithium polymer electrolyte battery**
- IT Conducting **polymers**
(Li-doped; all-solid-state **electrochem.** device and method of manufacturing)
- IT **Battery electrolytes**
Ionic conductors
Polymer electrolytes
Polymer networks
(all-solid-state **electrochem.** device and method of manufacturing)
- IT Acrylic **polymers**, uses
Fluoropolymers, uses
Oxides (inorganic), uses
Polyacetylenes, uses
Polyanilines
Polycarbonates, uses
Polyesters, uses
Polymers, uses
Polyoxyalkylenes, uses
Polysiloxanes, uses
Polythiophenylenes
Selenides
Sulfides, uses
RL: DEV (Device component use); USES (Uses)
(all-solid-state **electrochem.** device and method of manufacturing)
- IT Silicates, uses
RL: MOA (Modifier or additive use); USES (Uses)
(all-solid-state **electrochem.** device and method of manufacturing)
- IT **Polymers**, uses
RL: DEV (Device component use); USES (Uses)
(co-; all-solid-state **electrochem.** device and method of manufacturing)
- IT Secondary **batteries**
(**lithium**; all-solid-state **electrochem.** device and method of manufacturing)
- IT 1313-13-9, Manganese oxide MnO_2 , uses 1314-35-8, Tungsten trioxide, uses
1314-62-1, Vanadia, uses **1344-28-1**, Alumina, uses 7439-93-2,
Lithium, uses 7439-93-2D, **Lithium**, salt, uses
7439-95-4, Magnesium, uses 7440-09-7, Potassium, uses 7440-23-5,
Sodium, uses 7440-66-6, Zinc, uses 7440-70-2, Calcium, uses
7791-03-9, **Lithium perchlorate** 9002-83-9,
Poly(chlorotrifluoroethylene) 9002-85-1, Ethene, 1,1-dichloro-,
homopolymer 9003-07-0, Polypropylene 9010-79-1D, Ethylene-propylene
copolymer, fluorinated 9011-14-7, Pmma 9020-32-0 9020-73-9,

Polyethylene naphthalate 12017-00-4, Cobalt oxide coo2 12034-78-5,
Niobium selenide nbse3 12036-21-4, Vanadium oxide vo2 12039-13-3,
Titanium disulfide 12057-17-9, **Lithium** manganese oxide
(limn2o4) 12137-52-9, Vanadium oxide v3o8 12138-17-9, Vanadium sulfide
v2s5 12158-49-5, Chromium oxide cr3o8 12218-36-9, Chromium oxide cr2o5
14024-11-4, **Lithium** tetrachloroaluminate 14283-07-9,
Lithium tetrafluoroborate 21324-40-3, **Lithium**
hexafluorophosphate 24937-79-9, PvdF 25014-41-9,
Polyacrylonitrile 25067-58-7, Polyacetylene 25067-61-2,
Polymethacrylonitrile 25101-45-5, Ethylene-chlorotrifluoroethylene
copolymer 25233-30-1, Polyaniline 25322-68-3, Peo 29935-35-1,
Lithium hexafluoroarsenate 30604-81-0, Polypyrrole 33454-82-9,
Lithium triflate 39300-70-4, **Lithium** nickel oxide
90076-65-6 131344-56-4, Cobalt **lithium** nickel oxide
132404-42-3 162684-16-4, **Lithium** manganese nickel oxide
214536-41-1, Cobalt **Lithium** manganese oxide 329028-78-6
329028-80-0

RL: DEV (Device component use); USES (Uses)

(all-solid-state **electrochem.** device and method of manufacturing)

IT 25038-59-9, Polyethylene terephthalate, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(all-solid-state **electrochem.** device and method of manufacturing)

IT 7631-86-9, Fumed silica, uses

RL: DEV (Device component use); USES (Uses)

(colloidal; all-solid-state **electrochem.** device and method of
manufacturing)

IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-44-0, Carbon,
uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 12597-68-1,
Stainless steel, uses 12606-02-9, Inconel

RL: DEV (Device component use); USES (Uses)

(current collector; all-solid-state **electrochem.** device and
method of manufacturing)

IT 37220-89-6, **Lithium** β alumina

RL: MOA (Modifier or additive use); USES (Uses)

(β -type; all-solid-state **electrochem.** device and method
of manufacturing)

L23 ANSWER 30 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:12793 CAPLUS

DOCUMENT NUMBER: 134:74037

TITLE: Improved **lithium ion polymer**
electrolytes and methods of manufacturing an
electrochemical cell

INVENTOR(S): Munshi, M. Zafar A.

PATENT ASSIGNEE(S): Lithium Power Technologies, Inc., USA

SOURCE: PCT Int. Appl., 43 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001001507	A1	20010104	WO 2000-US16294	20000626
W: AU, BR, CA, CN, ID, IL, IN, JP, KR, MX, SG, VN				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
US 6413676	B1	20020702	US 1999-340944	19990628
JP 2003503822	T2	20030128	JP 2001-506631	20000626
US 2003091904	A1	20030515	US 2002-187483	20020702
PRIORITY APPLN. INFO.:			US 1999-340944 A	19990628
			WO 2000-US16294 W	20000626

AB A dimensionally stable, highly resilient, hybrid copolymer solid-solution **electrolyte**-retention film for use in a **lithium** ion **battery** in one preferred embodiment has a predominantly amorphous structure and mech. strength despite contact with liquid solvent **electrolyte**. The film is a thinned (stretched), cast film of a homogeneous blend of two or more **polymers**, one of which is selected for its pronounced solvent retention properties. A very high surface area inorg. filler dispersed in the blend during formation thereof serves to increase the porosity of the film and thereby enhance **electrolyte** retention. The film is soaked in a solution of liquid **polymer** with liquid organic solvent **electrolyte** and **lithium** salt, for absorption thereof. Use of a crosslinked liquid **polymer** enhances trapping of mols. of the **electrolyte** into pores of the film. The **electrolyte** film is sandwiched between flexible active anode and cathode layers to form the **lithium** ion **battery**. Novel methods are provided for forming the electrodes, the **polymer** substrate, and other elements of the **battery**.

IT 1344-28-1, Alumina, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (filler; improved **lithium** ion **polymer** **electrolytes** and methods of manufacturing **electrochem.** cell)

RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 25014-41-9, Polyacrylonitrile
 RL: DEV (Device component use); USES (Uses)
 (improved **lithium** ion **polymer** **electrolytes** and methods of manufacturing **electrochem.** cell)

RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

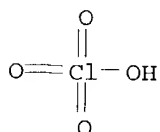
CM 1

CRN 107-13-1

CMF C3 H3 N



IT 7791-03-9, **Lithium perchlorate**
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(improved **lithium ion polymer electrolytes**
and methods of manufacturing **electrochem. cell**)
RN 7791-03-9 CAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC ICM H01M006-18
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **battery lithium ion polymer electrolyte**
IT Conducting **polymers**
(Li-doped; improved **lithium ion polymer electrolytes** and methods of manufacturing **electrochem. cell**)
IT Polyacetylenes, uses
Polyanilines
RL: DEV (Device component use); USES (Uses)
(Li-doped; improved **lithium ion polymer electrolytes** and methods of manufacturing **electrochem. cell**)
IT **Battery electrolytes**
Electron beams
Polymer electrolytes
UV radiation
(improved **lithium ion polymer electrolytes** and methods of manufacturing **electrochem. cell**)
IT Acrylic **polymers**, uses
Fluoropolymers, uses
Polycarbonates, uses
Polyesters, uses
Polyoxyalkylenes, uses
Polysiloxanes, uses
Polythiophenylenes
RL: DEV (Device component use); USES (Uses)
(improved **lithium ion polymer electrolytes**

- and methods of manufacturing **electrochem. cell**)
- IT Secondary **batteries**
(**lithium**; improved **lithium ion polymer electrolytes** and methods of manufacturing **electrochem. cell**)
- IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(oxymethylene-linked; improved **lithium ion polymer electrolytes** and methods of manufacturing **electrochem. cell**)
- IT Urethanes
RL: TEM (Technical or engineered material use); USES (Uses)
(trifunctional, crosslinking agent; improved **lithium ion polymer electrolytes** and methods of manufacturing **electrochem. cell**)
- IT 25067-58-7, Polyacetylene 25233-30-1, Polyaniline 30604-81-0, Polypyrrole
RL: DEV (Device component use); USES (Uses)
(Li-doped; improved **lithium ion polymer electrolytes** and methods of manufacturing **electrochem. cell**)
- IT 7631-86-9, Fumed silica, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(colloidal, filler; improved **lithium ion polymer electrolytes** and methods of manufacturing **electrochem. cell**)
- IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-50-8, Copper, uses 7440-66-6, Zinc, uses 12597-68-1, Stainless steel, uses
RL: DEV (Device component use); USES (Uses)
(current collector; improved **lithium ion polymer electrolytes** and methods of manufacturing **electrochem. cell**)
- IT 1344-28-1, Alumina, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(filler; improved **lithium ion polymer electrolytes** and methods of manufacturing **electrochem. cell**)
- IT 1332-29-2, Tin oxide 7440-44-0D, Carbon, intercalation compds., uses 9002-84-0, Ptfe 9003-07-0, Polypropylene 9003-11-6, Ethylene oxide-propylene oxide copolymer 9011-14-7, Pmma 11126-15-1, **Lithium** vanadium oxide 12057-17-9, **Lithium** manganese oxide LiMn2O4 12423-04-0, **Lithium** vanadium oxide LiV3O8 24937-79-9, PvdF 24968-11-4, Polyethylene naphthalate 25014-41-9, Polyacrylonitrile 25038-59-9, Polyethylene terephthalate, uses 25067-61-2, Polymethacrylonitrile 25230-87-9 25322-68-3, Peo 25322-68-3D, Peo, oxymethylene-linked 30871-57-9, Propylene-vinylidene fluoride copolymer 39300-70-4, **Lithium** nickel oxide 39457-42-6, **Lithium** manganese oxide 52627-24-4, Cobalt **lithium** oxide 61673-65-2, **Lithium** niobium selenide 74245-06-0, **Lithium** vanadium sulfide 98973-15-0 131344-56-4,

Cobalt **lithium** nickel oxide 136511-06-3, Meep 162684-16-4,
Lithium manganese nickel oxide 214536-41-1, Cobalt
lithium manganese oxide

RL: DEV (Device component use); USES (Uses)

(improved **lithium** ion **polymer electrolytes**
 and methods of manufacturing **electrochem.** cell)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7,
 Propylene carbonate 616-38-6, Dimethyl carbonate 7791-03-9,
Lithium perchlorate 14024-11-4, **Lithium**
 tetrachloroaluminate 14283-07-9, **Lithium** tetrafluoroborate
 21324-40-3, **Lithium** hexafluorophosphate 29935-35-1,
Lithium hexafluoroarsenate 33454-82-9, **Lithium**
 triflate 90076-65-6, **Lithium** bis(trifluoromethanesulfonyl)imid
 e 132404-42-3

RL: DEV (Device component use); TEM (Technical or engineered material
 use); USES (Uses)

(improved **lithium** ion **polymer electrolytes**
 and methods of manufacturing **electrochem.** cell)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 31 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:442060 CAPLUS

DOCUMENT NUMBER: 133:46207

TITLE: Microporous solid **electrolytes** for
lithium secondary **batteries**

INVENTOR(S): Jang, Dong Hun; Kim, Sa Heum; Kim, Han Jun; Hong, Sung
 Min

PATENT ASSIGNEE(S): Finecell Co., Ltd., S. Korea

SOURCE: PCT Int. Appl., 46 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000038263	A1	20000629	WO 1999-KR798	19991221
W: CN, JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 1171927	A1	20020116	EP 1999-960009	19991221
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2002543554	T2	20021217	JP 2000-590241	19991221
PRIORITY APPLN. INFO.:			KR 1998-57031	A 19981222
			WO 1999-KR798	W 19991221

AB The present invention relates to a solid **electrolyte** having a
 good conductivity to **lithium** ion by allowing the liquid components and
lithium salts to be absorbed into the **electrolyte** film
 containing an absorbent added at the time of its preparation and having a
 porosity,

a process for preparing the same and a rechargeable **lithium** cell using the same as an **electrolyte**. As the absorbent, inorg. materials having not more than 40 μm of particle size can be used. As the **polymer** binder, any binder whose solubility against the liquid **electrolyte** is small can be used. A wet process can introduce the porous structure of the **electrolyte** film. The solid **electrolyte** according to the present invention has the ionic conductivity of more than approx. 1 to 3 x 10⁻³ S/cm at room temperature and low reactivity to **lithium** metal. The cell is fabricated from the solid **electrolyte** together with electrodes by lamination or pressing methods and, the liquid **electrolyte**, which is decomposed by moisture, is introduced to a cell just before packaging. Therefore, the solid **electrolyte** according to the present invention is not affected by the humidity and temperature conditions during the manufacturing of the

electrolyte film. In addition, the solid **electrolyte** according to the present invention has high thermal, mech. and **electrochem.** stability, and thus is suitable as an **electrolyte** for rechargeable **lithium** cells.

IT 25014-41-9, Polyacrylonitrile

RL: TEM (Technical or engineered material use); USES (Uses)
(binder; microporous solid **electrolytes** for **lithium** secondary **batteries**)

RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N

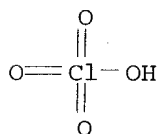


IT 7791-03-9, **Lithium** perchlorate

RL: DEV (Device component use); USES (Uses)
(microporous solid **electrolytes** for **lithium** secondary **batteries**)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 1344-28-1, Alumina, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(porous, absorbent; microporous solid **electrolytes** for **lithium secondary batteries**)

RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM H01M010-36

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **lithium battery** microporous solid **electrolyte**

IT Cellulose pulp
Cork
(absorbent; microporous solid **electrolytes** for **lithium secondary batteries**)

IT Polyurethanes, uses
Zeolites (synthetic), uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(absorbent; microporous solid **electrolytes** for **lithium secondary batteries**)

IT Synthetic rubber, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(acrylic-acrylonitrile-butadiene, binder; microporous solid **electrolytes** for **lithium secondary batteries**)

IT EPDM rubber
Fluoropolymers, uses
Polycarbonates, uses
Polyethers, uses
Polyimides, uses
Polymers, uses
Polyoxyalkylenes, uses
Polysulfones, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(binder; microporous solid **electrolytes** for **lithium secondary batteries**)

IT Wood
(flour, absorbent; microporous solid **electrolytes** for **lithium secondary batteries**)

IT Polyvinyl acetals
RL: TEM (Technical or engineered material use); USES (Uses)
(formals, binder; microporous solid **electrolytes** for **lithium secondary batteries**)

IT Secondary **batteries**
(**lithium**; microporous solid **electrolytes** for **lithium secondary batteries**)

IT Molecular sieves
(mesoporous, absorbent; microporous solid **electrolytes** for

- lithium secondary batteries)**
- IT Absorbents
 - Battery electrolytes**
 - (microporous solid electrolytes for lithium secondary batteries)
- IT Clays, uses
 - Mica-group minerals, uses
 - Minerals, uses
 - RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 - (particles, absorbent; microporous solid electrolytes for lithium secondary batteries)
- IT Binders
 - (polymers; microporous solid electrolytes for lithium secondary batteries)
- IT 9002-88-4 9003-07-0, Polypropylene 9003-53-6, Polystyrene 9004-34-6, Cellulose, uses
 - RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 - (absorbent; microporous solid electrolytes for lithium secondary batteries)
- IT 9002-86-2, Pvc 9002-89-5, Polyvinyl alcohol 9003-21-8, 2-Propenoic acid, methyl ester, homopolymer 9003-27-4, Polyisobutylene 9011-14-7, Pmma 9011-17-0, Vinylidene fluoride-hexafluoropropylene copolymer 9012-09-3, Cellulose triacetate 9016-00-6, Polydimethylsiloxane 17831-71-9, Tetraethyleneglycol diacrylate 24937-79-9, PvdF 25014-41-9, Polyacrylonitrile 25322-68-3 26967-02-2, Poly(butylidene) 114481-92-4, Maleic anhydride-Vinylidene fluoride copolymer
 - RL: TEM (Technical or engineered material use); USES (Uses)
 - (binder; microporous solid electrolytes for lithium secondary batteries)
- IT 67-68-5, DmsO, uses 68-12-2, uses 96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, uses 111-96-6, Diglyme 112-49-2, Triglyme 126-33-0 143-24-8, Tetraglyme 505-22-6, 1,3-Dioxane 556-65-0, **Lithium** thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 7782-42-5, Graphite, uses 7791-03-9, **Lithium** perchlorate 12162-79-7, **Lithium** manganese oxide limno2 12190-79-3, Cobalt **lithium** oxide colio2 14283-07-9, **Lithium** tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate 29935-35-1, **Lithium** hexafluoroarsenate 33454-82-9, **Lithium** triflate 90076-65-6 132404-42-3
 - RL: DEV (Device component use); USES (Uses)
 - (microporous solid electrolytes for lithium secondary batteries)
- IT 56-81-5, 1,2,3-Propanetriol, uses 60-29-7, Ether, uses 64-17-5, Ethanol, uses 67-64-1, Acetone, uses 67-66-3, uses 71-36-3, Butanol, uses 75-05-8, Acetonitrile, uses 75-09-2, Dichloromethane, uses 107-21-1, 1,2-Ethanediol, uses 108-94-1, Cyclohexanone, uses 123-91-1, Dioxane, uses 127-19-5, Dimethyl acetamide 141-78-6, Acetic acid ethyl

ester, uses 680-31-9, Hexamethylphosphoramide, uses 872-50-4, uses 7732-18-5, Water, uses 25917-35-5, Hexanol 30899-19-5, Pentanol
 RL: TEM (Technical or engineered material use); USES (Uses)
 (microporous solid **electrolytes** for **lithium** secondary **batteries**)

IT 1318-93-0, Montmorillonite, uses 12026-53-8, Paragonite
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (particles, absorbent; microporous solid **electrolytes** for **lithium** secondary **batteries**)

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (porous, absorbent; microporous solid **electrolytes** for **lithium** secondary **batteries**)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 32 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:442059 CAPLUS

DOCUMENT NUMBER: 133:46206

TITLE: Solid **electrolytes** using absorbent for rechargeable **lithium batteries**

INVENTOR(S): Jang, Dong Hun; Kim, Sa Heum; Kim, Han Jun; Oh, Seung Mo

PATENT ASSIGNEE(S): Finecell Co., Ltd., S. Korea

SOURCE: PCT Int. Appl., 37 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000038262	A1	20000629	WO 1999-KR797	19991221
W: CN, JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 1145354	A1	20011017	EP 1999-960008	19991221
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2002543553	T2	20021217	JP 2000-590240	19991221
PRIORITY APPLN. INFO.:			KR 1998-57030	A 19981222
			WO 1999-KR797	W 19991221

AB The present invention relates to a solid **electrolyte** having conductivity to **lithium** ion by providing spaces for liquid component and **lithium** salts to be absorbed by way of introducing an absorbent to the inside of an **electrolyte** film, a process for preparing the same and a rechargeable **lithium** cell using the same. As the absorbent, **polymers** or inorg. materials having not more than 40 μm of particle size can be used. As the **polymer** binder, any

binder whose solubility against the liquid **electrolyte** is small can be used. The solid **electrolyte** according to the present invention has the ionic conductivity of more than approx. 10^{-4} S/cm at room temperature

The cell

is fabricated from the solid **electrolyte** together with electrodes by lamination or pressing methods. The liquid **electrolyte**, which is decomposed by moisture, is introduced to a cell just before packaging. Therefore, the solid **electrolyte** according to the present invention is not affected by the humidity and temperature conditions during the manufacturing of the **electrolyte** film. In addition, the solid **electrolyte** according to the present invention has high mech. strength and little reactivity to **lithium** metal, and thus is suitable as an **electrolyte** for rechargeable **lithium** cells.

IT 9003-18-3

RL: TEM (Technical or engineered material use); USES (Uses)
(nitrile rubber, solid **electrolytes** using absorbent for rechargeable **lithium batteries**)

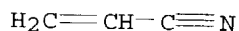
RN 9003-18-3 CAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

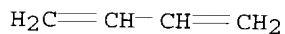
CMF C3 H3 N



CM 2

CRN 106-99-0

CMF C4 H6



IT 1344-28-1, Alumina, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(porous, particles; solid **electrolytes** using absorbent for rechargeable **lithium batteries**)

RN 1344-28-1 CAPLUS

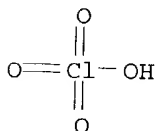
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 7791-03-9, **Lithium** perchlorate

RL: DEV (Device component use); USES (Uses)
(solid **electrolytes** using absorbent for rechargeable **lithium batteries**)

RN 7791-03-9 CAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 25014-41-9, Polyacrylonitrile
RL: TEM (Technical or engineered material use); USES (Uses)
(solid **electrolytes** using absorbent for rechargeable
lithium batteries)
RN 25014-41-9 CAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C3 H3 N



IC ICM H01M010-36
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **lithium battery electrolyte** absorbent
IT Polysiloxanes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(Me; solid **electrolytes** using absorbent for rechargeable
lithium batteries)
IT Synthetic rubber, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(acrylonitrile-butylidene; solid **electrolytes** using absorbent
for rechargeable **lithium batteries**)
IT Wood
(flour; solid **electrolytes** using absorbent for rechargeable
lithium batteries)
IT Polyvinyl acetals
RL: TEM (Technical or engineered material use); USES (Uses)
(formals; solid **electrolytes** using absorbent for rechargeable
lithium batteries)
IT Secondary **batteries**
(**lithium**; solid **electrolytes** using absorbent for
rechargeable **lithium batteries**)

- IT Molecular sieves
 - (mesoporous; solid **electrolytes** using absorbent for rechargeable **lithium batteries**)
- IT Clays, uses
 - Mica-group minerals, uses
 - Minerals, uses
 - Zeolites (synthetic), uses
 - RL: TEM (Technical or engineered material use); USES (Uses)
 - (particles; solid **electrolytes** using absorbent for rechargeable **lithium batteries**)
- IT Cork
 - (powder; solid **electrolytes** using absorbent for rechargeable **lithium batteries**)
- IT Absorbents
 - Battery electrolytes**
 - Cellulose pulp
 - (solid **electrolytes** using absorbent for rechargeable **lithium batteries**)
- IT Carbon black, uses
 - RL: MOA (Modifier or additive use); USES (Uses)
 - (solid **electrolytes** using absorbent for rechargeable **lithium batteries**)
- IT EPDM rubber
 - RL: TEM (Technical or engineered material use); USES (Uses)
 - (solid **electrolytes** using absorbent for rechargeable **lithium batteries**)
- IT Fluoropolymers, uses
 - RL: TEM (Technical or engineered material use); USES (Uses)
 - (solid **electrolytes** using absorbent for rechargeable **lithium batteries**)
- IT Nitrile rubber, uses
 - RL: TEM (Technical or engineered material use); USES (Uses)
 - (solid **electrolytes** using absorbent for rechargeable **lithium batteries**)
- IT Polycarbonates, uses
 - RL: TEM (Technical or engineered material use); USES (Uses)
 - (solid **electrolytes** using absorbent for rechargeable **lithium batteries**)
- IT Polyethers, uses
 - RL: TEM (Technical or engineered material use); USES (Uses)
 - (solid **electrolytes** using absorbent for rechargeable **lithium batteries**)
- IT Polyimides, uses
 - RL: TEM (Technical or engineered material use); USES (Uses)
 - (solid **electrolytes** using absorbent for rechargeable **lithium batteries**)
- IT Polymers, uses
 - RL: TEM (Technical or engineered material use); USES (Uses)
 - (solid **electrolytes** using absorbent for rechargeable **lithium batteries**)
- IT Polyoxyalkylenes, uses
 - RL: TEM (Technical or engineered material use); USES (Uses)

(solid **electrolytes** using absorbent for rechargeable **lithium batteries**)

IT Polysulfones, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (solid **electrolytes** using absorbent for rechargeable **lithium batteries**)

IT Polyurethanes, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (solid **electrolytes** using absorbent for rechargeable **lithium batteries**)

IT 9003-18-3
 RL: TEM (Technical or engineered material use); USES (Uses)
 (nitrile rubber, solid **electrolytes** using absorbent for rechargeable **lithium batteries**)

IT 1318-93-0, Montmorillonite, uses 12026-53-8, Paragonite
 RL: TEM (Technical or engineered material use); USES (Uses)
 (particles; solid **electrolytes** using absorbent for rechargeable **lithium batteries**)

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (porous, particles; solid **electrolytes** using absorbent for rechargeable **lithium batteries**)

IT 67-68-5, Dms0, uses 68-12-2, uses 96-47-9, 2-Methyltetrahydrofuran
 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8,
 Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, uses
 111-96-6, Diglyme 112-49-2, Triglyme 126-33-0 143-24-8, Tetraglyme
 556-65-0, **Lithium** thiocyanate 616-38-6, Dimethyl carbonate
 623-53-0, Ethyl methyl carbonate 646-06-0, 1,3-Dioxolane 7782-42-5,
 Graphite, uses 7791-03-9, **Lithium** perchlorate
 12190-79-3, Cobalt **lithium** oxide colio2 14283-07-9,
Lithium tetrafluoroborate 21324-40-3, **Lithium**
 hexafluorophosphate 29935-35-1, **Lithium** hexafluoroarsenate
 33454-82-9, **Lithium** triflate 90076-65-6 132404-42-3
 RL: DEV (Device component use); USES (Uses)
 (solid **electrolytes** using absorbent for rechargeable **lithium batteries**)

IT 9002-86-2, Polyvinyl chloride 9002-88-4 9002-89-5, Polyvinyl alcohol
 9003-07-0, Polypropylene 9003-27-4, Polyisobutylene 9003-53-6,
 Polystyrene 9004-34-6, Cellulose, uses 9011-14-7, Pmma 9011-17-0,
 Hexafluoropropylene-vinylidene fluoride copolymer 9012-09-3, Cellulose
 triacetate 17831-71-9, Tetraethylene glycol diacrylate 24937-79-9,
 Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile
 25322-68-3 26967-02-2, Poly(butylidene) 114481-92-4, Maleic
 anhydride-vinylidene fluoride copolymer
 RL: TEM (Technical or engineered material use); USES (Uses)
 (solid **electrolytes** using absorbent for rechargeable **lithium batteries**)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 33 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 1999:263256 CAPLUS

DOCUMENT NUMBER: 130:340568
 TITLE: The characteristics of **polymer electrolyte for lithium polymer battery**
 AUTHOR(S): Park, Soo-Gil; Park, Jong-Eun; Lee, Ju-Seong
 CORPORATE SOURCE: Department of Industrial Chemical Engineering, Chungbuk National University, Chungbuk, S. Korea
 SOURCE: Journal of the Korean Electrochemical Society (1999), 2(1), 1-4
 CODEN: JKESFC; ISSN: 1229-1935
 PUBLISHER: Korean Electrochemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB This paper reports primarily the recent development results of a solid **polymer electrolyte**, which is a key factor of the secondary **battery** system, that has been obtained during the process of the development of a **polymer type lithium battery**. The ionic conductivity of the solid **polymer electrolyte**, which is composed of polyacrylonitrile and LiClO₄ with Al₂O₃ dissolved as the supporting **electrolyte**, has been confirmed to be 2.3+10⁻⁴ S/cm at room temperature

IT 1344-28-1, Alumina, uses 7791-03-9, **Lithium perchlorate 25014-41-9**, Polyacrylonitrile
 RL: DEV (Device component use); USES (Uses)
 (characteristics of **polymer electrolyte for lithium polymer battery**)

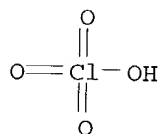
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

CMF C3 H3 N



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST **polymer electrolyte lithium battery**
 IT **Battery electrolytes**
 Electric impedance
 Ionic conductivity
Polymer electrolytes
 (characteristics of **polymer electrolyte** for
lithium polymer battery)
 IT Secondary batteries
 (lithium; characteristics of **polymer**
electrolyte for **lithium polymer**
battery)
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
 1344-28-1, Alumina, uses 7791-03-9, **Lithium**
 perchlorate 25014-41-9, Polyacrylonitrile
 RL: DEV (Device component use); USES (Uses)
 (characteristics of **polymer electrolyte** for
lithium polymer battery)
 REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L23 ANSWER 34 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 1998:603319 CAPLUS
 DOCUMENT NUMBER: 129:278470
 TITLE: Solid acrylic **polymer**-containing
electrolytes for **lithium** secondary
batteries
 INVENTOR(S): Kim, Dong-Won; Kim, Yang-Rook; Oh, Bu-Keun; Baek,
 Chang-Wu
 PATENT ASSIGNEE(S): Samsung Display Devices Co., Ltd., S. Korea
 SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10247417	A2	19980914	JP 1997-317540	19971118
JP 3233602	B2	20011126		
US 6001509	A	19991214	US 1997-971919	19971118
PRIORITY APPLN. INFO.:			KR 1996-54809	A 19961118
			KR 1997-15552	A 19970425
			KR 1997-22924	A 19970603

AB The **electrolytes** consist of (a) 50-90% acrylonitrile (I)-Me
 metharylate (II) copolymer and 10-50% **electrolytic** solns. containing

Li salts and aprotic solvents, (b) 10-90% I-II-polyoxyethylene oligomer Et ether methacrylate copolymer and 10-90% of the above solns., or (b) 10-90% $[\text{CH}_2\text{CR}_1(\text{CN})]_x[\text{CH}_2\text{CR}_1(\text{CO}_2\text{R}_2)]_y(\text{CH}_2\text{CR}_1\text{CX})_z$ [$\text{R}_1 = \text{H}, \text{Me}$; $\text{R}_2 = \text{alkyl}$; $\text{X} = \text{Ph}, \text{Cl}, \text{F}, \text{OCMe}(\text{SIC})$, heterocyclic group, $\text{CO}_2(\text{CHR}_1\text{CH}_2)_n\text{Me}$; $n = 1-12$] and 10-90% of the above solns. The Li secondary **batteries** using the **electrolytes** are also claimed. The **electrolytes** may contain ceramic fillers and the solns. may be filled in fine porous membranes. The **compns.** show good mech. properties and good ion conductivity and can be made into thin film **electrolytes** easily.

IT 25213-88-1P, Acrylonitrile-methyl methacrylate-styrene copolymer
30396-85-1P, Acrylonitrile-methyl methacrylate copolymer
197845-38-8P, Acrylonitrile-methyl methacrylate-polyethylene glycol ethyl ether methacrylate copolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(acrylonitrile-Me methacrylate copolymer and lithium salt aprotic solvent solution as solid **electrolyte** for secondary **batteries**)
RN 25213-88-1 CAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with ethenylbenzene and 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

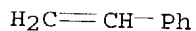
CMF C3 H3 N



CM 2

CRN 100-42-5

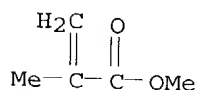
CMF C8 H8



CM 3

CRN 80-62-6

CMF C5 H8 O2



RN 30396-85-1 CAPLUS
 CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 2-propenenitrile
 (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

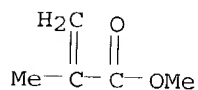
CMF C3 H3 N



CM 2

CRN 80-62-6

CMF C5 H8 O2



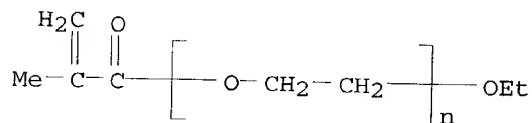
RN 197845-38-8 CAPLUS
 CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with
 α -(2-methyl-1-oxo-2-propenyl)- ω -ethoxypoly(oxy-1,2-ethanediyl)
 and 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 35625-93-5

CMF (C2 H4 O)_n C6 H10 O2

CCI PMS



CM 2

CRN 107-13-1

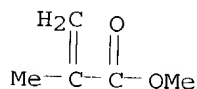
CMF C3 H3 N



CM 3

CRN 80-62-6

CMF C5 H8 O2

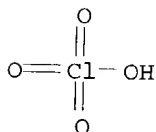


IT 7791-03-9, **Lithium perchlorate**

RL: TEM (Technical or engineered material use); USES (Uses)
(acrylonitrile-Me methacrylate copolymer and **lithium salt**
aprotic solvent solution as solid **electrolyte** for secondary
batteries)

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 1344-28-1, Alumina, uses

RL: MOA (Modifier or additive use); USES (Uses)
(fillers; acrylonitrile-Me methacrylate copolymer and **lithium**
salt aprotic solvent solution as solid **electrolyte** for secondary
batteries)

RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM H01B001-12

ICS C08K003-16; C08K003-22; C08K003-32; C08K003-34; C08K003-36;
C08K003-38; C08K005-06; C08K005-109; C08L033-12; C08L033-20;
H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76

ST solid acrylic **polymer electrolyte** secondary
battery; liq **electrolyte** soln acrylic **polymer**;

- lithium secondary battery acrylic polymer electrolyte**; acrylonitrile methyl methacrylate copolymer solid **electrolyte**; polyoxyethylene methacrylate copolymer solid **electrolyte**; aprotic solvent **polymer electrolyte** soln; thin film **electrolyte lithium secondary battery**
- IT **Solid electrolytes**
(acrylonitrile-Me methacrylate copolymer and **lithium salt** aprotic solvent solution as solid **electrolyte** for secondary **batteries**)
- IT **Solvents**
(aprotic; acrylonitrile-Me methacrylate copolymer and **lithium salt** aprotic solvent solution as solid **electrolyte** for secondary **batteries**)
- IT **Zeolites (synthetic), uses**
RL: MOA (Modifier or additive use); USES (Uses)
(fillers; acrylonitrile-Me methacrylate copolymer and **lithium salt** aprotic solvent solution as solid **electrolyte** for secondary **batteries**)
- IT **Ceramics**
(fillers; acrylonitrile-Me methacrylate copolymer and **lithium salt** aprotic solvent solution as solid **electrolyte** for secondary **batteries**)
- IT **Secondary batteries**
(**lithium**; acrylonitrile-Me methacrylate copolymer and **lithium salt** aprotic solvent solution as solid **electrolyte** for secondary **batteries**)
- IT **25213-88-1P, Acrylonitrile-methyl methacrylate-styrene copolymer**
30396-85-1P, Acrylonitrile-methyl methacrylate copolymer
197845-38-8P, Acrylonitrile-methyl methacrylate-polyethylene glycol ethyl ether methacrylate copolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(acrylonitrile-Me methacrylate copolymer and **lithium salt** aprotic solvent solution as solid **electrolyte** for secondary **batteries**)
- IT **96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 110-71-4 616-38-6, Dimethyl carbonate 623-96-1, Dipropyl carbonate 73506-93-1, Diethoxyethane**
RL: NUU (Other use, unclassified); USES (Uses)
(acrylonitrile-Me methacrylate copolymer and **lithium salt** aprotic solvent solution as solid **electrolyte** for secondary **batteries**)
- IT **7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium trifluoromethanesulfonate 155812-81-0**
RL: TEM (Technical or engineered material use); USES (Uses)
(acrylonitrile-Me methacrylate copolymer and **lithium salt** aprotic solvent solution as solid **electrolyte** for secondary **batteries**)
- IT **1344-28-1, Alumina, uses 7631-86-9, Silica, uses 37220-89-6,**

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 10

CMF C3



IT 1344-28-1, Alumina, uses and miscellaneous

RL: USES (Uses)

(γ -, electrolytes containing, lithium

perchlorate-polyacrylonitrile, for secondary batteries)

RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM H01M010-26

ICS H01M010-40; H01M006-18

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST battery polyacrylonitrile alkali salt electrolyte

IT Batteries, secondary

(magnesium/manganese dioxide-molybdenum and lithium/titanium
disulfide-molybdenum, with lithium perchlorate-
polyacrylonitrile electrolytes)

IT 7791-03-9, Lithium perchlorate

RL: USES (Uses)

(electrolytes containing polyacrylonitrile and, for secondary
batteries)

IT 7439-93-2D, Lithium, complexes with polyacrylonitrile

25014-41-9D, Polyacrylonitrile, lithium complexes

RL: USES (Uses)

(electrolytes, for secondary batteries)

IT 1344-28-1, Alumina, uses and miscellaneous

RL: USES (Uses)

(γ -, electrolytes containing, lithium

perchlorate-polyacrylonitrile, for secondary batteries)

=>

Lithium aluminate

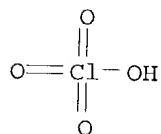
RL: MOA (Modifier or additive use); USES (Uses)
(fillers; acrylonitrile-Me methacrylate copolymer and **lithium**
salt aprotic solvent solution as solid **electrolyte** for secondary
batteries)

L23 ANSWER 35 OF 35 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1990:462636 CAPLUS
DOCUMENT NUMBER: 113:62636
TITLE: Secondary **batteries** with solid
polymer electrolytes
INVENTOR(S): Jiang, Zhe; Yu, Mengqi; Zhu, Wencun; Tian, Qingyuan
PATENT ASSIGNEE(S): Tianjin Normal Training School, Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 10 pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1030671	A	19890125	CN 1987-104786	19870711
			CN 1987-104786	19870711

PRIORITY APPLN. INFO.:
AB A thin polyacrylonitrile-alkali metal salt complex film is used as
electrolyte for **batteries**. Preferably, the mixing mol
ratio of polyacrylonitrile:salt is (2-6):1 and the salt is selected from
NaI, NaSCN, LiI, LiClO₄, and CF₃SO₃Li. The **batteries** have a
light metal (Li or its alloy, Al, Mg, and Zn) anode and a cathode of a
metal ion-insertable material such as TiS₂, MnO₂, V₆O₁₃, Mo, and/or C.
IT 7791-03-9, **Lithium perchlorate**
RL: USES (Uses)
(**electrolytes** containing polyacrylonitrile and, for secondary
batteries)
RN 7791-03-9 CAPLUS
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

No. 11



● Li

IT 25014-41-9D, Polyacrylonitrile, **lithium** complexes
RL: USES (Uses)
(**electrolytes**, for secondary **batteries**)
RN 25014-41-9 CAPLUS

IT 1344-28-1, Alumina, uses 7791-03-9, Lithium perchlorate 24980-62-9, Acrylonitrile vinyl acetate copolymer 25014-41-9, Polyacrylonitrile 25053-12-7, Acrylonitrile ethylacrylate copolymer
 RL: DEV (Device component use); USES (Uses)
 (gel electrolytic precursor and manufacturing of non-aqueous secondary battery)

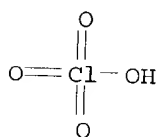
RN 1344-28-1 CAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7791-03-9 CAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

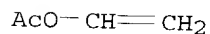
RN 24980-62-9 CAPLUS

CN Acetic acid ethenyl ester, polymer with 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 108-05-4

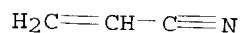
CMF C4 H6 O2



CM 2

CRN 107-13-1

CMF C3 H3 N



RN 25014-41-9 CAPLUS

CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

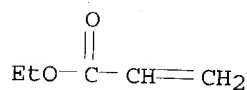
CRN 107-13-1
CMF C3 H3 N



RN 25053-12-7 CAPLUS
CN 2-Propenoic acid, ethyl ester, polymer with 2-propenenitrile (9CI) (CA
INDEX NAME)

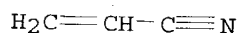
CM 1

CRN 140-88-5
CMF C5 H8 O2



CM 2

CRN 107-13-1
CMF C3 H3 N



IC ICM H01M010-40
ICS C08J009-28; C08L101-00
CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
ST gel **electrolytic** precursor nonaq secondary **battery**
IT Secondary **batteries**
(gel **electrolytic** precursor and manufacturing of non-aqueous secondary
battery)
IT Carbon black, uses
Carbon fibers, uses
Fluoropolymers, uses
Phenolic resins, uses
Polymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(gel **electrolytic** precursor and manufacturing of non-aqueous secondary
battery)
IT 68-12-2, Dmf, uses 872-50-4, N-Methyl-2-pyrrolidone, uses 1313-13-9,
Manganese dioxide, uses 1314-62-1, Vanadium oxide, uses 1317-33-5,